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ORIGINAL ARTICLES.

THE TREATMENT OF TUBERCULOSIS WITH YEAST-NUCLEIN.

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(Continued from page 659.)

CASE I.—A. W., was born in Ann Arbor, of German parents, in 1869. His father and mother were living at the time the treatment was begun, and no member of the family had given any evidence of tuberculosis. He had been employed in a drug-store for nearly ten years, the last three years at Calumet, Michigan. For the past four years, possibly longer, he had been drinking excessively. Dr. Pomeroy, of Calumet, sent him to me about the first of April, 1893. At Christmas, 1892, he weighed 138 pounds. About this time his cough attracted the attention of Dr. Pomeroy, who examined his sputum and found tubercle-bacilli present in large numbers. During the first four months of 1892 the disease made rapid progress. During April the evening temperature ranged from 102° to 103°. The man took from one-fourth to one-half grain of morphin each night to allay the cough. Night-sweats were constant, profuse and exhausting. During this time he staid in doors, and the hygienic condition of the house in which his parents lived, and where he staid from his coming home until his death, was extremely bad. Situated on low ground, without cellar, heated by stoves, unventilated, and damp, it furnished a most unsuitable abode for the patient. I recognized this fact all the time, but being unable to change his habitation, I thought that the results, whatever they might be, would be interesting, inasmuch as I would learn what could be done under such unfavorable conditions. On the first day of May, 1893, I began the nuclein-injections, and I insisted that however he might feel, or whatever the weather might be, he should walk to my office, a distance of about half a mile, every morning, and that in good weather he should be out of doors as much as possible. On this day he weighed 113 pounds. The use of morphin and all other drugs was prohibited. The upper third of the left lung and the apex of the right contained small cavities. The cough was severe and the expectoration measured half a pint or more daily. During the first three weeks of treatment he was compelled to rest several times on his way to the office each morning. The solution used contained 0.9 of one per cent. of impure yeast nucleinic acid, and 0.25 per cent. of potassium hydroxid. The injections were at all times made in the muscles of the chest. I began with three minims of this solution, and gradually increased the dose to eighty minims. The temperature, which was taken three times a day, with a tested thermometer, rapidly fell until May 12th, when it was normal all day. From this time until August 31st the maximum temperature was not above 99°, with the following exceptions: June 1st, he had a sharp diarrhea and an evening temperature of 100°. June 16th, he had an evening temperature of 101°, followed by a profuse sweat. July 13th and 14th he had a temperature of 100°, following unusually large injections of the nuclein. On July 21st his midday temperature was 101°, and the following day 100°. During these days he had no injections, but he took a solution of nuclein containing 0.5 per cent. alkali three times daily in tablespoonful doses. This was discontinued and the temperature became normal. August 4th and 11th, he had an evening temperature of 100° without any assignable cause. From August 21st to 25th he had a diarrhea, of unknown cause, and twice during this time the temperature registered 101°. August 29th, the temperature went to 100° after an injection.

The man's weight gradually increased, some weeks losing a little, others gaining, until August 31st he weighed 119 pounds. The cough and expectoration gradually decreased until my last August record on this point, which is as follows: "August 19th, examined the sputum. The amount is very small. He brought all that he raised this morning, not more than a teaspoonful. Before the treatment was begun he would cough and raise all night, unless he had a large dose of morphin. The sputum, however, though small in amount, is rich in germs."

I could not see that during this time there had been any marked alterations in the physical conditions, except that there was an absence of râles over the involved areas. The patient could now run two or three blocks without getting short of breath, but the cavities were still there. I should say that from May 12th to August 31st the progress of the disease was arrested or so modified that its advance could not be detected. I must admit, however, that I cannot speak with the confidence that some do concerning very slight alterations in the lungs as determined by physical signs.

From August 31st to September 12th I did not see the patient, although I provided for the continuance of the treatment through the kindness of my colleague, Dr. Clark, who did his duty thoroughly. But the patient took this time, as I afterward learned from his mother, to go on a protracted spree. She reported that he was frequently out at night until very late hours, and that more than once he came home intoxicated.

After my return he had only a few treatments, and some weeks passed without my seeing him. Late in October, the sickness and death from typhoid fever

of another member of the family depressed him very much. He began the use of morphin again, and a return of the high temperature, frequent cough and abundant expectoration showed the rapid progress of the disease. The last injection was given September 29, 1893, and he died March 17, 1894.

Just how much of the temporary improvement which accompanied the nuclein-treatment was due to this I cannot say. I am inclined, however, to attribute no small part of it to the temporary abandonment of bad habits and the getting out of doors, which took him for a considerable portion of the twenty-four hours from the unsanitary house. Moreover, open doors and windows during the summer reduced the ill-effects of his unsanitary surroundings to a minimum. I am glad to report this case, because it plainly teaches, in my opinion, that the sanitary conditions of the domicile and the habits of the patient are important factors in the treatment of tuberculosis. I believe that they are of much greater importance than climatic conditions.

CASE II.—F. M., a student from Kansas City, aged twenty-two; knew of no tuberculosis in the family. He had his first hemorrhage in 1891, and has had several recurrences since, the intervals becoming shorter. He had a quite profuse one six weeks before, and another the day before he first consulted me, which was late in April, 1893. He had weighed 125 pounds the preceding Christmas; his weight at the time of beginning treatment was 115½ pounds. Moist râles were heard over both lungs both anteriorly and posteriorly. No cavities could be detected. The sputum contained numerous tubercles half the size of peas. On crushing these between cover-glasses and straining, each was found filled with bacilli. The daily maximum temperature for three days before beginning the treatment averaged 100.3°. He had had a night-sweat every night for some weeks.

Treatment was begun May 1, 1893. The same solution in the same quantities as in the preceding case was used. The last treatment was given June 30, 1893. The temperature did not reach 100° after June 2d; it seldom went higher than 99°, and during the last four days it was normal continuously. The râles disappeared, and diminished resonance over the upper lobes was the only physical evidence of the diseased condition. During the treatment there was no gain in weight, the record for June 24th showing 114½ pounds. Night-sweats were occasional and slight during June. The cough and expectoration decreased, and some mornings during the latter part of June he failed to raise anything when asked to bring the sputum for examination; but when sputum was raised and examined, the bacillus was always found.

After leaving Ann Arbor he spent one week at the World's Fair, and then went home. A letter of July 10, 1893, states that his cough had been very infrequent, and the highest temperature observed was 99°, though it was taken somewhat irregularly. Later in the same month the young man, accompanied by his father and brother, drove in a light wagon from Kansas City to Boulder, Colorado, where a position had been tendered him, and where he has since lived. During this journey he lost some flesh, weighing 111 pounds after reaching Boulder. Since that time he has very slowly gained in weight, having increased to 125 pounds in June, 1894, when he visited Ann Arbor. I examined him carefully at that time, and could not detect any marked alteration in the physical signs from those observed one year before. He seldom coughed, sometimes not for several days, but when he did raise anything I could easily find the bacilli. He calls himself well, but the infection remains. He has had no nuclein since June 30, 1893. It is impossible to say whether or not the improvement would have continued, or whether or not the bacilli would have remained, had the treatment been kept up. To attempt to answer these questions would be to theorize, and this would be neither scientific nor profitable.[1]

CASE III.—H. H., a student from Silver Springs, N. Y., had been home during the spring vacation of 1893, and returned with a letter from Dr. Straight, of that place, to me, in April. He was twenty-four years of age, and his usual weight had been for some time 140 pounds, but the first day of May his weight was 127. His maternal grandfather was said to have died of pulmonary tuberculosis, but he knew of no other case in the family. He had never seen this grandfather. His father and mother were living and well. He had had a hemorrhage in the spring of 1892, but during the early winter of 1892–93 he had felt especially well. However, during the latter part of this winter he had felt depressed and weak. Late in March he had another hemorrhage. The upper lobe of the left lung was extensively involved, and contained a large cavity. The apex of the right lung contained a smaller cavity. The evening temperature averaged 100.4.° Cough and expectoration were free, and the sputum consisted of a purulent fluid containing numerous tubercle-bacilli. The patient was very weak, and should have been compelled to discontinue his work, which was that of a student in mechanical engineering, demanding considerable exertion, but he was to graduate in a few weeks, and insisted on continuing his labors. He had the same treatment as the preceding two, taking his last injection July 7, 1893. During this time he gained three and one-half pounds, and during the last week of his stay here his daily maximum temperature averaged 99.4.° There was no detectable alteration in the physical signs, and the sputum remained substantially the same. He then returned to his home in New York, where he took cod-liver oil and malt. For some weeks he sent me a daily record of his temperature. The average maximum was 100.5° for the week ending July 28th. After this he was for eight weeks in a sanitarium at Lakewood, New Jersey. He also sent me a partial record of his temperature while there, but

[1] Since writing the above I have learned that Mr. F. M. had several hemorrhages recently.

as he was taking antifebrin whenever the temperature rose to 100°, the record is of no value. On his return from the sanitarium to his home he sent me some of the sputum, in which I found no evidence of improvement. In February, 1894, he sent to me for some nuclein to be used by Dr. Straight, but a letter from the doctor told me he regarded the case as hopeless. However, he did use the nuclein for some weeks, but the disease progressed, and death occurred October 1, 1894. I do not believe that the nuclein could have been of any material benefit in this case had it been continuously employed.

CASE IV.—Dr. M., aged twenty-six, consulted me June 21, 1893. At my request he wrote at that time the following short history of his case: "In February, 1892, I was not feeling well, and attributed this to the want of exercise, as I was closely confined in the laboratory, but had no symptoms to attract attention to the urinary tract. One day, while examining various urines, I accidentally discovered pus in mine. I took boric acid, then salol, pichi, and lastly buchu, without effect. Stone was suspected, and Dr. Nancrede passed a sound with negative result; but after the sounding the urine became almost normal, and remained so for several weeks, then gradually became as cloudy as ever. In July, 1892, Dr. Warthin discovered tubercle-bacilli in small caseous masses deposited in the urine. I then took a capsule containing one grain each of quinin and iodoform and one-thirtieth of a grain of strychnin sulphate, three times daily, from August, 1892, to February, 1893. I took also during this time six bottles of malt. During August and September, 1892, I used injections per catheter of iodoform in oil, but this set up such a violent inflammation that I desisted from all local medication. In February, 1893, my appetite completely failed, and thinking that the iodoform caused this I discontinued it. Then I began hypodermic injections of iodin and gold, taking at the same time about two ounces of cod-liver oil per day. I took during February, March, April and May, 1893, about sixty injections of iodin and forty of gold, ten minims in each injection. The cod-liver oil became nauseating, and had to be discontinued, after having taken about one gallon in seven weeks, and gaining seven pounds. My weight when bacilli were discovered in July, 1892, was 119 pounds; in September, 124 pounds. After taking the cod-liver oil my weight reached 131, but soon fell after discontinuing the oil, and now it is 122. I have never had night-sweats, or rise of temperature. My appetite is good, but my bowels are constipated. The local symptoms are scarcely noticeable, but there are slight irritation and pain in the perineum on urinating."

A few days ago I wrote to Dr. M., who is now practising in Nebraska, and asked him to give a short synopsis of his case from beginning the nuclein-treatment to the present time. I insert his answer without alteration:

HEMINGFORD, November 16.

"Yours of the 16th instant to hand this morning, and I enclose an account of my past and present condition. I keep nuclein on hand all the time, and it promptly relieves any vesical irritation. I have used it with marked benefit in two cases of pulmonary tuberculosis—one is now quite well, the other is dead. I used it with good effect in several cases of acute naso-pharyngeal catarrh. My own health I consider as fully restored. On June 21, 1893, I had first injection of nuclein, about 5 mg. On June 22, 23, and 24 I had increasing doses, and June 25 had 25 mg., which caused severe local inflammation, chill and fever.

On June 28th, I had another small injection. On June 30th I went to Manistique, Mich. My weight then was 121½ pounds. On July 12th I began the use of nuclein, 4 c.c. per day hypodermically, and continued for four weeks, when I weighed 124½ pounds. At this time I had a severe attack of diarrhea. On August 18th I received more nuclein, which I used as before until about September 12th, when I left Manistique and went to Chicago for two weeks. On September 26th I returned to Ann Arbor and again used nuclein hypodermically, from 6 to 12 c.c. per day. On October 4th I commenced injecting directly into the bladder about 2 oz. nuclein plus 2 oz. normal saline, after first washing out the bladder with normal saline solution. My weight was 119 pounds. I had so much irritation of the bladder that I had to take tincture of hyoscyamus constantly. I injected nuclein hypodermically twice a day and into the bladder once or twice a week till about November 26th. I used only vegetable diet. My weight was 123½ pounds. I had to discontinue injections into the bladder on account of irritation. I had much stomach-trouble, and on December 23d I weighed 118½ pounds. On December 23d I discontinued all injections and took nuclein only by the stomach, about 3 or 4 oz. per day. I took also iron and ergot for two weeks. I changed diet from vegetable to chiefly proteid food, and took a little cod-liver oil, which disturbed the digestion. On January 6, 1894, I felt much better. Irritation of the bladder had ceased, digestion was much improved, and my weight was 120 pounds. On March 14th, the bladder was very irritable, and incontinence of urine was very troublesome. I had to use a rubber urinal. I used nuclein hypodermically and also injected it into the bladder. I took uva ursi for vesical irritability. On April 4th I left Ann Arbor for Nebraska. The bladder was very painful, and urine could not be retained for more than two or three hours at any time. My weight was 118 pounds. On June 15th I had improved very much. I have used altogether four gallons of nuclein-solution, mostly injected into the bladder. I had no incontinence and very little irritation of the bladder. The urine still contained pus. My weight was 125 pounds. On July 27th I had a severe attack of acute cystitis, lasting three weeks, and I passed a small phosphatic calculus about a quarter of an inch in diameter, after which the cystitis rapidly improved and soon ceased entirely.

November 19th. Since July I have steadily improved, and have used no treatment of any kind except an occasional injection into the bladder of an emulsion of iodoform. I have no incontinence and scarcely noticeable irritation. I am feeling

better generally than during any time the past ten years. I am heavier than for twelve years and have gained 7½ pounds in the past two weeks. The urine is still slightly cloudy, mostly from mucus, as there is little pus. I sent a sample to Dr. Warthin last week to be examined for tubercle-bacilli.

A. L. MUIRHEAD.

Dr. Warthin reports that he could find no tubercle-bacilli in the urine.

CASE V.—G. T., aged twenty-two, first consulted me in October, 1892. At that time he had considerable irritation at the neck of the bladder, frequency of micturition, and a deposit of blood in the urine. He was sent to Dr. Nancrede with the request that he be sounded for stone. Dr. Nancrede failed to find a stone and suggested tuberculosis. Examination showed tubercle-bacilli abundantly present in the urinary sediment. Salol, quinin, iodoform, and other remedies were tried, both internally and by injection into the bladder, but the progress of the disease was in no wise arrested. In the spring of 1893 T. went to Colorado. He remained in the West, in Colorado and New Mexico until the first of April, 1894, when he returned to Ann Arbor to try the nuclein-treatment. Evidently his stay in the West had not retarded the progress of the disease. When he went West the disease was confined, so far as the symptoms indicated, to the bladder. On his return the left kidney formed a tumor as large as the head of a newly-born child, and could be plainly felt through the thin walls. Nearly every day he was compelled to take morphin in order to allay the severe pain due to the passage of tuberculous masses from the kidney to the bladder. This pain came on in paroxysms, and often seemed as severe as that due to the passage of calculi along the ureter. The urine contained a large amount of pus and blood, in which tubercle-bacilli were easily detected. Sleep was often prevented by the pain. With the exception of the bladder and kidney there was no evidence that other organs were involved in the tuberculous process.

The nuclein-injections were begun April 12, 1894, and with a few exceptions they have been continued daily from that time to the present writing (November 20). A one-half per cent. solution was used until about the middle of October, since which time a one per cent. solution has been employed. Ten minims constituted the first dose, and the amount was rapidly increased to eighty with the weaker solution and forty with the stronger. The injections are made deeply into the muscles on each side of the spine, over the kidneys. There is no evidence of enlargement of the right kidney, and the greater number of the treatments have been given on the left side.

The greatest weight reached before his illness was 132 pounds. The decrease was gradual and constant to the time of beginning the treatment, when he weighed 114 pounds. Since beginning the treatment the weight has steadily increased and is now 138 pounds. The temperature at first often reached 102.5° and sometimes 103° in the evening. It has not been above the normal since early in October. The urine will be wholly free from sediment for several consecutive days, and then there will be a little pus in which the bacilli can be detected. There is still some undue frequency of micturition, and at times a sensation that the bladder has not been wholly emptied at the close of the act. The kidney has decreased in size but is still abnormally large. There has been no pain from the passage of tuberculous masses through the ureter since the latter part of May. Of course, it is possible that the disease may extend again. I shall not call this a cure until the urine becomes permanently normal, and this may never happen. But even should this not occur, the history of the case is unique.

CASE VI.—This case is reported out of order chronologically, in order to bring together the cases of urinary tuberculosis which I have treated with nuclein. R., a physician, practising in Wisconsin, ordinarily very robust and weighing about 200 pounds, aged forty-three years, had not been feeling usually vigorous for some months, and had lost about 15 pounds. In February, 1894, he noticed traces of blood in his urine. Some of this was sent to me for examination. The tubercle-bacillus was detected and a guinea-pig was inoculated with the sediment. Twelve days later, Dr. R. came here, and both of us being anxious to know whether or not the microscopic finding would be confirmed by the inoculation-experiment, the pig was killed. There was a tuberculous nodule containing bacilli at the place of inoculation, and two smaller ones in the peritoneum. The next day, March 19th, the treatment was begun. There had been no elevation of temperature before this, and a general feeling of lassitude and the deposit in the urine were practically the only things to attract attention. Ordinary doses of nuclein were followed in this case by a marked elevation of temperature, so that after the first few weeks not more than 30 minims were given. The deposit wholly disappeared in a short time. The injections were continued up to August, since which time no treatment has been used. The lost flesh has been regained and the urine remains normal. Evidently, in this instance, the disease had not progressed very far.

CASE VII.—Mrs. Z., came to me June 25, 1893. Her condition was bad. She had a large abscess from pyosalpinx, from which an umbilical hernia resulted. The left lung was involved throughout its entire extent and contained a large cavity in the upper lobe, and the upper lobe of the right lung was consolidated. She had been treated for some months with injections of gold and iodin. Her weight was 117 pounds. The treatment was begun June 25, 1893, and was continued to September 19th of the same year. Although there was some slight gain in weight (to 123 pounds), the disease steadily progressed. In September she went to Arizona, where she remained until June, 1894, when she returned to Ann Arbor, and, failing constantly, died early in September.

CASE VIII.—Mrs. C., had been known to have "consumption" for two years. Her weight was reduced to 80 pounds, from 115 in health. Both lungs were filled with cavities. The evening tem-

perature ranged from 102° to 103°. Nuclein was used two or three times per week without the slightest effect.

CASES IX to XVI inclusive were all instances of extensive involvement and with cavities. A detailed report of these would not be of special interest. Suffice it to say that although there were in some marked evidences of temporary improvement while under treatment, the disease, on the whole, has progressed. I am not inclined to attribute the temporary improvement in these cases to the treatment. One who has had any large observation of this disease knows how often these false promises are made under all forms of treatment and even when no medication is employed.

CASE XVII.—A. W., a colored man, a student, who is paying his way through college by acting as general servant in a fraternity house, came to me for examination and treatment June 5, 1894. He was then twenty-five years old and weighed 140 pounds. In the spring of 1893 he weighed 154 pounds. He went to the World's Fair, and thinks that he "took cold there." He began to cough, lose weight, and have a "tired feeling." When he came to Ann Arbor in October, 1893, he weighed 148 pounds. He had been coughing quite violently for six weeks before he consulted me. His mother and one brother died of pulmonary tuberculosis, the first many, the second, three years ago. He had had sharp pains in the lower lobe of the left lung for some days, and this had caused him to consult a physician. The upper lobes of both lungs are filled with moist râles, and there is a pleuritic effusion on the left side. I am not sure about cavities; if any, they are small. The sputum was abundant, purulent, and filled with tubercle-bacilli. Guinea-pigs were inoculated with the sputum and died from tuberculosis in from four to six weeks. His evening temperature for some days after beginning the treatment was 100°. W. continued his duties as a servant and his studies until the close of the college year in June last. In July he went to the Oakland Hotel, at St. Clair, where he acted as waiter and general servant during the season. He returned to Ann Arbor in October and took up his work again. He has not lost a day from his work during this time. The conditions under which he lives are not the most favorable for one in his condition.

The injections were begun January 5, 1894, were continued until the close of the college year, were occasionally administered by Dr. Burtless at the Oakland during the summer, and were resumed by me on his return to Ann Arbor in October. From the beginning until October a one-half per cent. solution of nucleinic acid was employed, and latterly a one per cent. solution. The injections have all been made into the muscles of the back, and in amount have averaged about thirty minims.

He now weighs 140 pounds, just what he did when I began the treatment, though he continued to lose for a while, and reached the lowest point, 132 pounds, about three weeks after beginning the treatment. The pleuritic effusion disappeared in a few days, and the moist râles in as many weeks. His evening temperature fell about one degree, and has averaged about 99° ever since. The amount of sputum is now small, but it contains bacilli. There is lessened resonance over the upper lobes on both sides, but there is no evidence that the disease has progressed. He works hard, sleeps well, looks and feels well, but he is still infected.

I believe that in this case the progress of the disease has been retarded by the treatment—I will not say arrested, because so long as the infection remains there also remains the probability that it may at any time become progressive.

CASE XVIII.—E. W., aged twenty-three, a bookkeeper in a bank at Chelsea, Michigan, consulted me February 19, 1894. His mother had a cough for some years before her death, which occurred in 1886. His father is living and well. He has no brother or sister. In the spring of 1893 he weighed 140 pounds; his weight at time of first examination was 134 pounds. He had been coughing and raising abundantly since the last of August, 1893. He passed an examination for life-insurauce September 6, 1893. This, however, is no proof that he was sound at that time. The expectoration was very abundant, thin, purulent, and contained numerous bacilli. There was a small cavity in the upper lobe of the right lung, and an extensive pleuritic effusion upon the left. Some of this effusion was drawn with a needle and found to contain tubercle-bacilli.

Treatment was begun February 19, and has been continued with occasional interruptions until to-day, November 23. The kind and amount of nuclein-solution used were the same as in the preceding case. This young man has continued his work, getting at it early and leaving it late. In addition to his work, he has come to Ann Arbor, a distance of eighteen miles, daily, except Sunday, for treatment. This he has done through all kinds of weather, sometimes waiting until late at night for the return train. Surely these conditions have not been most favorable.

In this case the pleuritic effusion was very slow in disappearing, and to-day there is diminished resonance over the left lung. I cannot see that there has been any material change in the upper lobe of the right lung. The sputum is not so abundant, but the relative number of bacilli has not been altered. The temperature varies with the amount of work which the patient does. When he is very busy, the evening temperature goes as high as 102°. When he has a day of rest it seldom rises above 99°. This has been the case all the time, though the average temperature is higher now than it was last February, and, judging by this more than by the physical signs, I think that the disease is slowly progressing. His weight now is 135 pounds.

CASE XIX.—Miss H., twenty-seven years old, a saleslady in a dry-goods store, consulted me December 31, 1893. Three years before she had weighed 146 pounds, had been gradually losing, and at the time of examination weighed 115 pounds. She had been coughing and raising "a little" in the morning during these three years. She had no night-sweats. There is no family history of tuberculosis.

The upper portion of the upper lobe on the right side was consolidated, and moist râles were heard over the upper lobe on the other side. The sputum was not purulent, but contained tubercle-bacilli.

The treatment was begun January 4 and continued daily until the middle of July, when it was given twice a week, and since the 1st of October once a week. The average daily maximum temperature was, during the first six weeks, 99.8°; then it gradually fell to the normal by March 5th, and since that date no elevation of temperature has been found, with one exception, although observations were made, with occasional lapses, three times a day. The germs in the sputum, which was tested once a week as long as there was any, gradually decreased, and the first record of "no tubercle-bacilli" was made March 28. None has been found since. November 14 Miss H. had quite a sharp attack of bronchitis, with a temperature of 101°, cough, and expectoration, lasting through three days. This sputum was most carefully examined for tubercle-bacilli, with negative results. The weight has gradually increased and has reached 126 pounds. Miss H. discontinued her duties as a saleslady from the beginning of the treatment until May 1st, since which time she has been at work. In taking the treatment she walked daily, without reference to weather, from her home to my office, a distance of about one mile, and back. Did I not know that her lungs had been infected I do not think that I would be able to detect any evidence of it from a physical examination.

CASE XX.—Miss W., aged twenty-three, first consulted me February 12, 1894. She is of German parentage. Her father's family was said to be "consumptive," though the father died three years ago of chronic nephritis. The mother is not robust, but has never been sick. She has one brother twelve years old, who is well. During the spring and summer of 1893 Miss W. did not feel well and declined in weight from 125 to 114 pounds. She went to the World's Fair in September, and while there she had frequent and exhaustive pulmonary hemorrhages. The physician called in at the time pronounced the disease tuberculosis. She was brought home and kept closely confined to the house for fear of another hemorrhage. This fear was realized December 31, when the flow of blood was quite profuse. From this to the time of my seeing her her movements were still more restricted. Such in brief was the history given me, and from it one would infer that the infection had occurred in the winter of 1892-93, but on baring the breast for examination of the lungs a large scar just above the clavicle on the right side was seen, and on inquiry I learned that some three years before a gland had enlarged, suppurated and discharged, and other glands as large as hickory-nuts were found in the same region. In all human probability these glands were tuberculous, and the patient had been infected much earlier than the history previously given would indicate. Moist râles were heard over the apex on each side. No cavities could be detected. The sputum was small in amount, very ropy, and not purulent. The tubercle-bacilli were numerous. Guinea-pigs were inoculated with the sputum and died of tuberculosis after from six to ten weeks.

I made it a condition of my undertaking the case that Miss W. should walk to my office, a distance of about half a mile, every morning. The treatment was practically the same as in the preceding case. During the first two weeks the highest temperature observed was 99.5.° This sometimes occurred in the morning, more frequently at noon, and very seldom at night. Since the last of February the temperature has never been found above the normal. The bacilli gradually decreased in numbers. The last found was on March 28, when three bacilli were found on four cover-glasses. The patient continued to raise a little each morning until about the first of July. Since then there has been no cough. The weight increased to 122 pounds. The enlarged glands have markedly decreased in size, but can still be felt. There has been no hemorrhage. There is impaired resonance over the apex of the left lung; the other seems normal.

CASE XXI.—Mrs. M., aged twenty-six, with one child, six years old, came to me November 15, 1893. She had been coughing and raising for a little more than a year. She had lost during this time about fifteen pounds. The sputum was small in amount, consisting principally of glairy mucus. Bacilli were found, but not more than half a dozen on each slide. The evening temperature stood quite uniformly at 99°. Mrs. M. had thirty drops of a one-half per cent. solution of nucleinic acid daily from the date mentioned to the last of June. Since that time she has had an occasional injection. The germs disappeared before January 15th, and have not reappeared, She weighs more now than she ever did, and there is no cough. The physical signs in this case were never sufficiently marked for me to attempt to define them, and after repeated examinations I could not positively say that there was any abnormality.

CASE XXII.—Mrs. R., a married woman, with three children, and who did washing for a living, came to me May 21, 1894. She had three years before weighed 140 pounds; then her weight was 106. She has done no washing, save for her own family, since I began to treat her, but she has done all of her own household work and has taken care of her children. She has walked to the office, a distance, during a large part of the time, of about one mile. The sputum in this case was at first abundant, but non-purulent. Bacilli were few. The upper lobe of the right lung was filled with moist râles. This patient has had about thirty drops of a ½ per cent. solution of nucleinic acid daily from the time of beginning treatment until the middle of October. The improvement was slow until recently, when it has progressed most rapidly. Since the middle of October she has had an injection every other day. The bacilli disappeared in July, and her weight is now 122 pounds. The cough has ceased, and there is no expectoration. No râles can be detected.

CASE XXIII.—Mrs. C., aged forty-five, a farmer's wife, and the mother of ten children, came for treatment May 17, 1894. She was coughing very much, but raised little. The sputum was non-

purulent, and contained but few bacilli. During the previous six months she had been reduced from 130 to 115 pounds. She had treatment from May 17 to July 7; none since. In June the cough ceased, and she has raised nothing since. She now weighs 135 pounds.

CASE XXIV.—E. H., twenty-one years old, with no family history of tuberculosis, lived on a farm until seventeen years old, then went into a general merchandise store for two years. The past two years he has been book-keeper at Alexandria Bay, on the St. Lawrence. He has worked in-doors about sixteen hours per day. Four other employés of this firm have developed pulmonary tuberculosis. H. felt perfectly well until July 13, when he had a hemorrhage, losing about "a teacupful of blood." He quit work for three days, but had another hemorrhage September 3. He has had cough and night-sweats since the first hemorrhage. He came to Ann Arbor September 28, weighing 134 pounds. Cough and expectoration were slight; few bacilli were in the sputum. These had been detected by a physician at Alexandria Bay. There is slight dulness over both apices. This patient had in all thirty-four injections of a 1 per cent. solution of nucleinic acid. The cough and night-sweats disappeared after the twelfth injection. No bacilli could be found after this in the small amount of fluid sputum brought up. The weight increased eight pounds.

These persons had no other medication, with the exceptions already stated, beside the nuclein.

These cases will be sufficient, I think, to enable me to draw the following conclusions:

(1.) In pulmonary tuberculosis which has progressed to the formation of cavities, nucleinic acid from yeast will not produce a cure. Unfortunately, these are the cases that we are expected to cure. These are the cases in which any proposed remedy for the disease will be tried, and I wish to state here most emphatically that I do not claim anything for nucleinic acid in these conditions. Indeed, I know, probably better than any one else, of how little value this agent is in these cases.

(2.) Even when the tuberculosis is of long standing, and when the extent of tissue involved is great, *so long as secondary infection with pyogenic germs has not occurred*, the proper use of the remedy may *retard* (I do not say arrest) the progress of the disease.

(3.) In initial cases of pulmonary tuberculosis, when there is no secondary infection, and when the area involved is small and the resistance of the patient not too much reduced, the proper employment of this agent may produce at least a temporary cure. I say "at least a temporary cure," because none of these cases has been under observation a sufficient length of time for me to say that the bacilli will not reappear.

(4.) In the few cases of urinary tuberculosis that I report in this paper the results have been remarkably satisfactory.

The results that I have secured so far encourage me to continue the work. There is no reason for supposing that the nucleinic acid obtained from yeast has any properties superior in a curative way to the nucleins contained in other substances. The number of nucleinic acids is limited only by the kinds of cells in existence, and I shall compare others with this one.

The early detection of tuberculosis is now a possible, not to say an easy, thing, but it is a lamentable fact that to many practising physicians it is an impossible thing. This will be the case so long as our most popular and most numerously attended medical schools fail to give any adequate individual instruction in bacteriology. The sputum of every patient who raises any should be examined for tubercle-bacilli, and urinary sediment containing pus, blood, or much epithelium should be similarly tested.

I must not close this paper without mentioning another point: I am convinced, especially from my experiments on animals, that nucleinic acid, improperly used, may do harm. It acts, as I have elsewhere shown, by stimulating the organs that elaborate the polynuclear corpuscles, and these may be over-stimulated. Nucleinic acid fails to be of service unless these cell-forming organs respond. They may fail to respond on account of lowered vitality, or they may be paralyzed, as it were, by an excessive dose of stimulant. The agent is not one to be used indiscriminately. Already some physicians are supplying tuberculous patients with hypodermic syringes and solutions of nucleinic acid, and telling them to go ahead and treat themselves. Such practice as this may make the study of this subject result in a misfortune.

ON THE VALUE TO THE SURGEON OF ANTIPYRIN, OF MUSTARD, AND SUGAR, AND ON THE PREPARATION OF CERTAIN SURGICAL DRESSINGS.

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(Continued from page 664.)

ON THE USE OF MUSTARD AS AN ANTISEPTIC.

IT has been long known to surgeons that mustard is a powerful deodorant, and among chemists it has been well and long known that the essential oil of mustard is a most powerful antiseptic. In fact, among some it has been classed as the most powerful of all. Years ago it had been my custom in teaching anatomy to use mustard as a deodorant upon the hands after working with anatomic material. After considerable use with it in this way I gained such confidence in it that later I did not hesitate to go at once from the dead-room, or from

a post-mortem examination, to operate upon the living patient, after having disinfected my hands thoroughly with this material. For several years it had been my custom to thus resort to mustard, until the vagaries of surgical fashion led me to discontinue it and to disinfect my hands with potassium permanganate, sulphurous acid, or other more unpleasant or irritating materials, of which I soon got tired and from which my hands used to more or less continuously suffer.

A year ago or more I was enabled to subject the mustard again to such a rigid test that it seemed to me sufficient to give it the highest place in professional confidence. It was my fortune to care for two cases of diphtheria, upon both of whom I operated, and from one of whom I myself contracted the disease. Both died, and upon the day before I became sick myself I went to the house to withdraw the intubation-tube that had been inserted the day before. The case had been malignant in its clinical aspects, and the mouth and pharynx were filled with horribly offensive material. Prying apart the jaws I succeeded in reclaiming my tube, and then the problem was to disinfect my finger. From this house I had to proceed at once to another patient, upon whom I was to operate for varicocele. I spent twenty minutes or more with hydrogen dioxid, and with alcohol, endeavoring to disinfect my hands, particularly my left index finger. Even after this time the odor still clung about it, and I would not trust it for any operative work, especially about the veins. Upon arrival at the house of my patient I called for some ordinary flour of mustard, and while washing my hands for the operation spent some ten or fifteen minutes in rubbing this mustard, made into a paste, into all the crevices and cracks about my hands and finger-nails. All odor was thereby at once removed. I proceeded with the operation as usual, and never had a more satisfactory result. The next day I was taken sick myself, which shows that there were about me at that time the germs of the disease, but that they did not cling to my hands. This restored all my early confidence and liking for mustard for this purpose, and since then I have used it practically to the exclusion of everything else both in my hospital and private work.

The object of this therapeutic note then is to publish the foregoing facts and to urge most strongly upon those who need antiseptics or deodorants to give mustard a thorough trial. In fact, the range of applicability of ordinary flour of mustard as found in the kitchen of every household is very large. The ordinary physician is often called upon to get his hands into material which is offensive and malodorous, and many are the expedients to which he resorts in order to rid himself of the tell-tale odor. After making post-mortem examinations, after removing decomposing placental masses, and cleaning out the uterus in cases of abortion, after opening various deep and fetid abscesses, after handling gangrenous cases, there is nothing that I know of so readily at hand and so effective as mustard. After handling infectious and contagious cases, like erysipelas, diphtheria, or anything else about which inheres odor or contagion, there can be no more satisfactory antiseptic than this. The circumstances under which it cannot be procured are most rare, and are simply those emergencies that preclude the use of any of the antiseptics generally in favor.

ON THE USE OF SUGAR AS AN ANTISEPTIC.

I have often been surprised to find how little the valuable preservative properties of sugar have been taken advantage of by the profession. The present note is intended not as a plea for its general and deliberate use, but to call attention to the fact that in it we have a valuable substance that may frequently be of service in emergency cases. Even in the backwoods, wherever men may congregate, there is virtually always some sugar to be had. If sugar will preserve fruit and meat and various other substances put up for domestic consumption, it will also preserve human flesh; and in the case, for instance, of a serious compound fracture, when nothing else is at hand, I have often suggested to my students that they use ordinary granulated sugar, which can be poured into an open wound, or which can be done up in a bag and wrapped around a wounded part, or which can be used in ways that will suggest themselves at the time. Dilute sugary solutions may serve as culture-media for bacteria; but neither pathogenic forms nor saprophytic organisms grow in concentrated solutions or syrups. Consequently, so long as a sufficient quantity is used, one need have no fear of harm from such a source. More than this, even in the deliberate care of patients when facilities are at hand, I have often resorted to sugar, particularly so in time past, when some of the older methods were more in vogue, and when it was still customary, for instance, to use a fracture-box. When used deliberately for this purpose it may be well to add and mix thoroughly with it a small proportion of naphthalin —a mixture that I first saw used in Luecke's wards in Strassburg in 1882. I shall never forget my first visit to these wards. Immediately upon entrance my nostrils were saluted by an odor to which they were previously a stranger. This, I soon learned, was due to naphthalin, which at that time was extensively used by Luecke. So pleasantly did the odor strike me, and so happy seemed the effects of its use, that I took some home with me, and was, so far as I know, the first to use naphthalin in this

country as an antiseptic in surgery. From time to time since then I have written of its virtues, and I still regard it very highly, while its relative cheapness speaks also strongly in its favor. A mixture of one or two per cent. of naphthalin with granulated sugar certainly enhances the efficiency, and I think will commend itself to any one who chooses to use it.

UPON THE EASY PREPARATION OF EFFICIENT SURGICAL DRESSINGS.

One of the problems with which I have to concern myself has been that preparation of dressings which should make them most portable and at the same time most reliably antiseptic. In the ordinary operating-case that one carries in going to a distance, either for emergency or deliberate work, he wishes to have everything that may be needed, and at the same time to have it in the most compact and portable form. For the past few years I have resorted to the following general expedients, some of which were suggested to me, or elaborated for me, by my former assistant, Dr. Meyer.

A collection of surgical needles, adaptable to any sort of a case, is put into a small vial with a screw-top, a little cotton being inserted in the neck of the vial before screwing the cap down. This bottle can be placed in the dry sterilizer or in an oven whenever needed, and so baked that its contents are absolutely sterilized. My catgut is wound in short pieces upon small pieces of glass tubing, two or three feet being wound around each tube. A quantity of both of these, prepared in the usual way, is then sterilized together by being put into a tightly-stoppered flask with alcohol, which is then boiled under pressure, the temperature being raised to that of boiling-water. A few of these rolls of catgut—and, by the way, silk may be prepared in the same way—are then taken out and put into little portable bottles full of alcohol, from which they are withdrawn as necessity requires. They are thus kept absolutely sterilized. My iodoform-gauze is cut into small strips, a little fruit-jar or similar flask filled with them, the top screwed down, and the whole placed in the dry sterilizer and baked. I also usually carry naphthalin-gauze —which is made from surgeon's gauze as it comes from the shop, cut into compresses of any desired size, and packed into a fruit-jar, at the bottom of which a teaspoonful or more of crystals of naphthalin is dropped. After the jar is filled with gauze and its top fastened down, this is put in the dry sterilizer and also baked. By the heat the naphthalin is volatilized and well dispersed through the gauze, which at the same time is absolutely sterilized. I carry in my travelling-case a saturated alcoholic solution of hydronaphthol, of which a little may be put into boiling-water, which will then dissolve all of it that it can take up, and in which solution the instruments may be dropped when they cannot be otherwise sterilized. My drainage-tubes and some small pieces of green silk protective are also sterilized and carried in strong antiseptic solutions, so that they may be utilized at any time when called for.

It is my custom frequently to anoint the parts after an operation with some unguent which shall prevent the dressings from clinging too tightly as they dry, by which comfort is enhanced at the time of the first redressing. For this purpose I ordinarily use albolene or one of the coal-tar preparations, which is put into little ointment-jars along with sufficient naphthalin to make an ointment of from 3 to 5 per cent. strength, and sometimes with a little essential oil to give it a pleasant odor. These jars of ointment are put in the sterilizer with the caps screwed down, are kept at a temperature of from 100° to 120° C. for an hour or two, by which their contents are absolutely sterilized, so that I have no fear in applying this ointment directly over the wound or upon the dressings that are to be applied to it.

These are little hints concerning practical matters, which, however, are of sufficient importance to justify their publication here, in the hope that by the simplification of the details of sterilization of dressings a more general adherence to the principles of *a*septic rather than of *anti*septic surgery may be stimulated.

MYXEDEMA AND ITS DIFFERENTIAL DIAGNOSIS FROM CHRONIC NEPHRITIS.

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(Continued from page 651.)

IN the first place, we need to remember that edema occurs under two forms of nephritis in very different degrees. 1. In the acute form of nephritis with scanty urine of high specific gravity, large amounts of albumin, and many casts, when all the general symptoms are intense and convulsions are imminent, the edema is usually extreme. The face, body, arms, and especially the legs, are much swollen and pit upon pressure, and it is evident that the edema is governed not a little by gravitation, for it is more extreme in the dependent parts of the body —the feet, ankles, and legs, if the patient is up and about; in the back, if he is in bed. Now in myxedema, even when the swelling is very marked, it has characteristics entirely different from those just described. It affects the forehead as well as the face, it is as intense in the upper eyelid as in the lower, it never fails to cause a thickening of the bridge of the nose, and of the lips and tongue. In all these respects it differs from the edema of nephritis. It

is more intense over the masseter muscles and in the supra-clavicular spaces than anywhere else, forming pads of soft tissue almost like lipomata. These spaces are not often swollen in nephritis. It affects the surface of the body quite uniformly, but is more noticeable on the abdomen than on the back, no matter what the position habitually assumed. Nor is it all affected by gravitation. The legs are uniformly swollen all the way down, not particularly about the ankles or tibia, and the hands and arms are quite as much affected as the feet. The very soft parts about the genitals are not excessively swollen, as in nephritis. In fact, as a rule, the extreme swelling in myxedema is usually in the face and neck, and not in the feet and legs—just the reverse of the condition in nephritis. Finally, in myxedema there is no pitting upon pressure, and no evidence that fluid beneath the skin can be displaced by manipulation. Aside, then, from the fact that the the slow onset and gradual course of a case of myxedema contrast markedly with the acute and severe symptoms of acute nephritis, it is possible by an examination of the edema to differentiate between these two diseases.

2. But there is another form of nephritis that produces edema, viz., chronic nephritis with contracted kidneys, hypertrophied heart, and increased arterial tension. This is the form with which myxedema is most frequently confounded. An excessive amount of urine of low specific gravity, scanty traces of albumin, and a few hyaline casts are commonly observed in both diseases. In both the symptoms are of slow progress; in both cerebral and gastric symptoms are prominent; and in both the pallor and yellowish tint of the skin are known to occur. Here again it is to be remembered that the edema is entirely different in the two diseases. In chronic nephritis the edema is not very marked, but when it is present it is uniformly noticed about the ankles after standing, or along the tibiæ; it never affects the hands and arms; when it appears in the face it is under the eyelids, never on the forehead, lips, or tongue. In a word, it is located in dependent parts of the body, and is determined by gravitation, or it appears in the parts where the normal tissues are loose and where the subcutaneous tissue has spaces in which fluid can easily collect. The description already given of myxedematous swellings contrasts in every point with these particulars. Hence, it is evident that in the second form of nephritis, in which edema occurs, the examination of the patient should suffice to detect the differences from myxedema.

But there are many other points of differentiation. I have alluded to the color of the skin and the pallor as common to the two diseases. In myxedema the skin is remarkably dry and usually in a state of active desquamation. The patients have the appearance of having been recently powdered, and by rubbing the surface gently, scaly white particles of epithelium are easily brushed off. This condition of the skin is certainly not common, if it occurs at all in nephritis.

Again, in myxedema there is no suggestion that the skin is unduly stretched, as in ordinary edema, and it is not thin, and smooth, and flossy. While, as a rule, in myxedema the color of the skin is yellowish-white, all observers have noticed a bright-red blush over the cheek-bones, which sometimes gives the impression that the patients, who are usually women, have been rouged. This high color is not seen in nephritis.

The entire absence of perspiration in myxedema, the inability of the patient to get into a perspiration by any exertion or exposure to heat is another symptom not particularly noticed in nephritis.

The condition of the hair—thin, bristly, coarse, and dry—is characteristic of myxedema. Inquiry will also usually elicit the fact that from all parts of the body where hair appears there has been a marked falling of it, so that the patient may be noticeably lacking in it; in the axillæ or about the genitals, as well as on the head. In nephritis the growth of hair is not affected.

Lastly, it is to be remembered that the thyroid secretion has an important function in regulating the body-temperature, and that in myxedema there is a uniform depression of temperature, the thermometer registering only 97° or 97.5° in the mouth. Such a condition is not observed in nephritis or in any other disease. It is accompanied by a subjective feeling of cold, which is one of the most annoying symptoms to those who live in the North. It is one of the immediate results of the thyroid treatment that the temperature rises under the use of the extract. I have tried the extract in other diseases, and have never seen it produce this effect excepting in cases of myxedema. In cases of akromegaly, in which it seems to have a beneficial effect, it does not cause any elevation of temperature; and in a case of megalocephaly, in which it was very thoroughly tried to the extent of ten tablets daily, it had no such effect. It is by watching the temperature and the pulse that the proper dosage of the extract is to be determined in each case. It is better to begin with small doses, one tabloid (5 grains) daily, or 10 drops of the glycerin extract of Dr. Crary[1] daily, and gradually increase the amount, than to give large quantities and cause disagreeable symptoms. In the case here reported the cardiac distress caused by the extract was very marked, and could not be counteracted.

[1] New York Medical Record, June 17, 1893.

While in the case reported there were no mental symptoms present, I think it is right to call attention to the fact that a considerable proportion of the cases of myxedema suffer from hallucinations, from great mental depression, from defects of memory, and from decided inability to use the mind. Three out of the thirteen cases that I have seen were brought to me because of the mental symptoms. The type of derangement which is present in myxedema is somewhat different from that ordinarily seen in mental diseases. While there is a depression and a decided melancholic tendency, there are very rarely any delusions, and never the typical facial expression of melancholia; nor are there intercurrent periods of mental depression and self-accusation which often occur in melancholia. The patients do not wake early in the morning with the intense depression that is seen in that disease. In melancholia hallucinations are exceedingly infrequent, while almost all myxedematous patients when affected mentally will describe hallucinations of sight and, sometimes, of hearing, occurring frequently at night; animals and faces are seen, and voices are heard, yet, as a rule, these hallucinations are recognized as products of the mind; they are not firmly believed in, and they do not become the cause for excitement as in hallucinatory insanity.

The prevailing mental tendency in myxedema is toward a demented condition; the patients are stupid, dull, sit listless, doing nothing, prefer to be left alone, take no interest in their surroundings, and appear to be lacking in all spontaneous mental processes; yet even this form of dementia differs decidedly from the primary dementia or the terminal dementia of insomnia, for the patients can be aroused to thought, show few defects when excited to mental action, and none of the incoherence of speech which betrays a mind permanently shattered. The entire disappearance of all these mental symptoms is one of the gratifying results of the treatment with thyroid extract. The three patients to whom I have alluded remain in a state of mental as well as physical health so long as they continue to use the extract. It is not at all improbable that a careful search in the asylums of this country would result in the discovery of a number of cases of myxedema now supposed to be instances of chronic dementia, but really capable of cure.

The Treatment of Infectious Diseases with Antitoxin.—It is said that to Dr. Geo. H. F. Nuttall, formerly of Johns Hopkins Hospital, but at present attached to the Hygienic Institute of Hamburg, really belongs the credit of having established the principle upon which depends the treatment of infectious diseases with their respective antitoxins. The results of his observations were contained in a thesis presented for the degree of the University of Göttingen four years ago.

AN EPIDEMIC OF PARALYSIS IN CHILDREN, WITH A REPORT OF ONE-HUNDRED-AND-TWENTY CASES.[1]

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(Continued from page 625.)

CONCLUSION.

THE diagnosis is yet not free from doubt, as most diagnoses are which are based upon clinical considerations alone and unsupported by the results of pathologic examination. It rests between cerebro-spinal meningitis, multiple neuritis, and poliomyelitis, or a combination of the last two.

1. Cerebro-spinal meningitis may, I think, be set aside under the force of the facts already alluded to. Epidemics of this disease are common enough, and its general course is definite, with a special symptomatology. In the present case there was almost an entire lack of those symptoms, and there were besides manifestations which have never been noticed in epidemics of cerebro-spinal meningitis.

2. H. Oppenheim, Berlin, in his work on *Diseases of the Nervous System*, emphasizes the view that poliomyelitis is due to an infective microörganism, and in the present epidemic there was much evidence pointing to the operation of such an agent. Medin, of Stockholm, reported at the Tenth International Medical Congress an epidemic of infantile paralysis, an account of which appears in the *Centralblatt für klinische Medicin*, September 5th, 1891. The cases numbered forty-four, and occurred chiefly during the months of July and August, but they were spread over five months in all. The disease appeared in children who were previously healthy and with no apparent cause. The initial symptoms were fever, somnolence, indigestion, diarrhea, or constipation and vomiting in rare instances. Paralysis now supervened, and the fever shortly subsided. In three cases there was facial monoplegia, and facial paralysis, and polyneuritis in five cases. Abducens paralysis was present in five cases, twice with ordinary poliomyelitis, once with polyneuritis, once with polio-encephalitis, and in one fatal case. On examination it was found that the nuclei in the pons and medulla corresponding physiologically and morphologically with the cells of the anterior horns of the spinal cord were affected. At the time of the meeting Heubner stated that he regarded the disease as an infective one. Henoch found the same difficulty which now presents itself, namely, the presence of cerebral symptoms.

There is every inducement to regard the present outbreak as of a similar nature. Clinically the

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[1] An addendum received too late for insertion in the issue of December 8.—Editor THE MEDICAL NEWS.

course of the disease was the same as in poliomyelitis, as a reference to the cases makes clear. There was the initial feverishness, aching pains, abrupt paralysis of the nature commonly known as "infantile," and with a distribution highly characteristic. If it were not for the disturbance of the vagus one would have no hesitation upon clinical grounds in pronouncing the epidemic one of poliomyelitis. The mode of onset, the paralysis itself, the age of the patients, the season in which the epidemic occurred, the distribution of the paralysis, and the subsequent behavior of the muscles, all point to this disease. Besides, it is not uncommon to have cerebral disturbance in poliomyelitis, with convulsions and coma; even diplopia has been noted. In the cord of a child dead of this disease the lesion is not confined to the cells of the anterior horns; there may be, as I have said, a general hemorrhagic myelitis, and even obvious meningeal involvement. There may also be pain, referred occasionally to the course of the nerves, and simulating a peripheral neuritis. In an epidemic including so many cases it is not probable that they would all adhere to the usual standard, and it is to be expected that some would overflow into the class of neuritis or cerebro-spinal meningitis.

3. The evidence in favor of the outbreak being due to peripheral neuritis rests upon the disturbance of the vagus. But if one regards, with Gowers, "symmetrical weakness of the extensor muscles situated in the forearm, and in the corresponding muscles in the lower part of the leg," as the leading motor symptom, then it will not explain the present malady, since this condition was absent in far more than half the cases. Indeed, the paralysis was "characteristically random in distribution," that is characteristic of poliomyelitis; and Gowers further affirms that the nerve-trunks are sometimes probably inflamed in the latter affection.

Finally, one is driven to the conclusion that the cases constituting the epidemic mainly followed the type of poliomyelitis, but that in some there were elements suggestive of multiple neuritis, either as an independent affection or the common result of a common cause.

CLINICAL LECTURE.

MULTIPLE NEURITIS, WITH THE DEVELOPMENT OF UNILATERAL FACIAL PARALYSIS LATE IN THE COURSE OF THE DISEASE.

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WE shall study to-day the case of D. F., fifty years of age, colored, single, a male laborer, born in Kentucky, but who has been living in Colorado since 1872. As a child he was well and strong, and thinks he did not suffer from any of the diseases incident to early life. When two years old he had an attack of smallpox, and was ill about four months. At his thirtieth year he contracted a chancre. He has never indulged in alcohol to excess. During the last twelve years he has worked in damp places, and frequently contracted colds. Ten years ago the glands of his neck suppurated, and about that time he experienced numb and tingling sensations in the feet and legs below the knees. These sensations would pass away on exercising, but when at rest his legs would become stiff and painful. After suffering with these symptoms, which increased for some weeks, he had to quit work a week; he was then able to resume work, although for some months he was not entirely free from uncomfortable sensations in the legs and feet. Subsequently to this trouble he remained in good health until December, 1893, when, after working in a damp and cold place, he first felt numb and tingling sensations in his toes and in the anterior portions of the soles of the feet. In a few days these sensations had spread all over the feet, and extended up the legs nearly to the knees. About this time his ankles seemed weak, so that he could not stand without some support. As he expresses it, he "rocked on his feet." Within two weeks from the time the numb and tingling sensations were first experienced in the feet he found his legs were paralyzed from the knees downward. About the time the legs were first paralyzed he felt a burning sensation in his hands, especially in the palms, and a numbness in the fingers, and a week or ten days later his arms were paralyzed from the elbows downward. A few weeks after the paralysis became manifest he was troubled less from burning and numb sensations. From December, 1893, to March, 1894, he was treated for rheumatism. About the latter date a disagreeable tingling sensation, which later assumed a distressing burning character, appeared in the feet, and was worse at night and during cloudy and inclement weather. Similar sensory disturbances soon afterward manifested themselves in the hands, but to a less intense degree. He was admitted into the nervous wards of the Arapahoe County Hospital, August 11, 1894.

Examination.—He lies in bed with all muscles below the knees completely paralyzed. Foot-drop is well marked, with extreme plantar contraction, and toes flexed, the great toes being flexed to the greatest possible degree. By using considerable force I am able to dorsally flex the feet at right angles with the legs. The legs lie straight at the knees, and he can flex and extend the legs at these joints, but the muscular power is slight. Flexion and extension at the hips are fairly good, but the muscles that make these movements are rather weak. Moving the legs and thighs at the knees and hips causes some pain, or a drawing sensation in the calf and posterior thigh-muscles. Extreme wasting has taken place in all the muscles below the knees, and to some extent in the thigh-muscles. The greatest amount of muscular atrophy is found in the interossei of the feet and in the anterior tibial and peroneal groups. The trunk-muscles are nearly normal. Wrist-drop is present, with flexor contraction of the muscles of the hands and wrists. Both hands ordinarily lie in the wrist-drop position, yet with considerable effort he is able to extend the left wrist on a line with the forearm, but he cannot extend it beyond this point. Marked

atrophy is present in the muscles of the hands, most pronounced in the interossei and in those forming the thenar eminences. The muscles of the forearms are wasted, but to a much less degree than the muscles of the legs below the knees. The muscles of the upper arms are fairly strong, and present but slight wasting; the muscles of the shoulders appear normal; none of the muscles below the knees or elbows responds to the strongest faradic current from a large-sized Flemming battery. All these muscles show reaction of degeneration. The muscles of the neck, face, and larynx are not involved.

Sensory phenomena. Tactile sense, when tested by the contact of a feather, is lost on the feet and legs from a point about midway between the ankle-joints and knee-joints downward; the sense of touch is present down to a point about six inches above the ankle-joints; in the right hand and arm the feather in contact is not felt from a point four inches above the wrist-joint downward, and in the left, from a point about six inches above the wrist-joint downward, while a feather in motion can be felt over the greater portion of the backs of the hands and wrists, but is not perceived on the dorsal surfaces of the fingers, the palmar surfaces of the fingers and hands, and the anterior surfaces of the wrists, and the anterior surfaces of the arms from a point about two inches above the wrist-joints downward. Tactile sense is present and nearly normal over all other portions of the body. Pain-sense is present throughout the body, but is not normally acute in the areas of tactile anesthesia until the skin is pierced. Temperature-sense is lost all over the feet, delayed, uncertain, and lessened over the ankles and areas of tactile anesthesia of the legs, and much perverted over the hands, but not lost as in the feet. Localization-sense is greatly disturbed, especially over the feet, as a sensation produced on the leg is referred to the foot, and sometimes to the foot of the opposite side. Pressure-sense is disturbed more in the hands than in the feet. Joint-sense and posture-sense are present and about normal. Muscular sense is absent.

The knee-jerks, the plantar, cremaster, and forearm reflexes are absent; abdominal and iritic reflexes are present. Taste, smell, hearing, and vision are about normal. The internal and external ocular muscles, and an ophthalmoscpic examination show no abnormalities.

During the five weeks he has been in the hospital there has been a steady but rather slow improvement of his condition. The contractures of the flexor muscles of the feet, the legs below the knees, the hands and the arms below the elbows, were so great that we were compelled to give the patient an anesthetic before the deformities could be overcome. After this procedure the hands and arms were put on padded splints, and by means of adhesive plaster the feet have been kept forcibly dorsally flexed. The apparatus was removed every second day, allowed to remain off several hours, and the parts thoroughly masséd. By the end of two weeks we had pretty well overcome the contractures in the flexors of the feet and ankles, and since then sand-bags laid at the soles of the feet have been sufficient to keep the feet in proper position. We have not been so successful in getting rid of the contractures of the hands and wrists, but these are much less than when the patient entered the hospital. The splints are now kept on the hands and arms about half the time. The muscles will not respond to the faradic current, and in consequence this is at present valueless in the treatment. The continuous and interrupted galvanic current is the most useful form of electricity for nerves and muscles in this stage of the disease. His food has been as nutritious as the hospital affords, with abundance of soups, meats, and eggs. In the way of medicine, iron, arsenic, and strychnin have seemed most appropriate. To-day he is able to slightly flex and extend the right foot. No movements of the left foot have been regained. He is now able to extend both wrists. Tactile anesthesia is slightly less than when he entered the hospital. Peripheral paralysis of the left side of the face developed after the patient had been in the hospital two weeks.

Let us consider the nature of our patient's trouble. In the first place, I wish to call your attention to the marked symmetry of the disease, limited as it is mainly to the distal portions of the extremities; the failure of the muscles to respond to the faradic current, and changed reaction to the galvanic; the pronounced muscular atrophy with motor paralysis; loss of and disturbed sensory function. There are many diseases with which a case of this kind may be mistaken by the casual and superficial observer. The least likely is rheumatism, yet the patient tells us that he was treated during all of last winter for this affection. In the present instance only gross ignorance or criminal negligence would permit such a mistake. In rheumatism there sometimes occurs paralysis early in the disease, either of an inhibitory or hysterical origin; but this is rare, and it only lasts for a few days. I have seen one such case. The man was apparently unable to move a hand or foot, but the ankle-joints and knee-joints, not the nerves, were very tender, and were the seat of severe pain. Suspecting the character of the trouble, large doses of sodium salicylate were given, and within two days the patient began to move the hands and feet. Late in rheumatism there may be partial paralysis and well-marked wasting of the muscles below the affected joint in which adhesions have occurred, producing a condition known as arthritic muscular atrophy; but there is no loss of sensation, the affected muscles respond to the faradic current almost normally, the disease is not symmetrical nor limited to the distal portion of the extremities. The temporary paralysis in the early stage of acute rheumatism, and the arthritic muscular paralysis usually affecting one limb, apparently from rheumatic inflammation of a large joint, are about the only points of similarity between rheumatism and the symptoms presented by the patient before us, while the symmetry of his disease, the distal portions of the limbs being as a rule alone affected, the electric changes, the sensory phenomena, and the nerves, instead of the joints, being involved, are abundantly sufficient to prevent a mistake in the diagnosis if care and judgment are used in the examination and summing up of the case.

In poliomyelitis the absence of objective sensory phenomena and the symmetry of the paralytic symptoms serve to distinguish this disease from the one before us. Spinal pachymeningitis is attended with radiating pains from the spine, with involvement of the trunk-muscles and those of the upper portions of the limbs, with severe pain on moving the muscles of the back, and with incomplete paralysis and sensory loss, distrib-

uted irregularly, symptoms very unlike those present in our patient. In acute ascending paralysis the feet, legs, thighs, trunk, and arms become affected in the order named. The ataxic symptoms manifested by the man before us, with loss of the knee-jerk, has more than once misled careless observers to mistake the disease for locomotor ataxia, but the latter disease has shooting pains, prominent eye-symptoms, anal and vesical disturbances, absence of paralysis until very late, when it is incomplete, and wrist-drop and foot-drop are never present. There are many other points of difference, but these are the most prominent. Myelitis affects the anal and vesical sphincters, the muscles of the trunk up to the level of the spinal lesion, and when the lower portion of the cord is the seat of inflammation, anesthesia of the external genitalia and the parts around the anus is present. We can then exclude myelitis in this patient.

The character of the paralysis, the distribution of the anesthetic areas, the extreme muscular wasting and the well-marked electric changes which have taken place in the muscles, enable us at once to dismiss the suggestion of hysteria, an affection which should always be allowed to obtrude itself in the mind of every one when engaged in arriving at a diagnosis by exclusion in cases attended with paralysis and loss of tactile sense. We have left but one other affection, multiple neuritis, which will likely account for the condition of this man. The symptoms that this patient presents are typical of multiple neuritis. The symmetry of the parts affected is almost complete; the parts invaded are the extremities, in the arms below the elbows, and in the legs, principally the regions below the knees, although motor weakness is found in the muscles of the thighs, and to a slight extent in those of the hips, but no loss of sensation is found above the knees; the feet and hands are affected more than the forearms; wrist-drop and foot-drop, profound muscular wasting, with electric changes and absence of the deep reflexes—all go to make up a clinical picture the like of which is found only in multiple neuritis. When we call to mind that the vesical and anal sphincters have not been affected, and that the nerves were at one time tender and the seat of pain and distressing sensations, there seems to be no room to doubt the correctness of the diagnosis.

As the management of individual cases of multiple neuritis depends somewhat upon the cause of the inflammation, it will be well for us to inquire into the etiology of this man's attack. This man suffered from syphilis twenty years ago, but syphilis in its tertiary stages attacks mainly fibrous and connective-tissue elements. I have not observed, or seen the report of a case of typical parenchymatous multiple neuritis caused by syphilis. It seems to me that we may dismiss the consideration of the syphilitic poison as a causative factor in this man's case. The principal causes for us to consider in the present instance are diphtheria, alcohol, malaria, exhaustion, insufficient nourishment, gout, rheumatism, and exposure to wet and cold. In the absence of the history of diphtheria or involvement of the muscles of the iris and palate, and the long duration of the disease (diphtheric multiple neuritis running its course in two or three months), we are justified in excluding the effects of diphtheric poison. The patient has never been addicted to the steady or excessive use of alcohol; he has not been exposed to malaria for more than twenty years; his work has not been exhausting; he has been able to obtain plenty of nutritious food, and he has never suffered from gout, so that we may as well dismiss all causes first enumerated except rheumatism and exposure to wet and cold. His occupation during the last twelve years has necessitated his being more or less exposed to damp and cold, and undoubtedly the slight attack of nervous disturbance from which he suffered some ten years ago was of the same character as the present one (though much lighter). He tells us that he has never suffered from attacks of acute rheumatism, and that he enjoyed good health from the time of his attack, ten years ago, until the beginning of his present illness, in December, 1893. It is probable, then, that to exposure we must attribute the cause of his trouble.

The duration of the disease is variable. The diphtheric form, as a rule, runs the shortest course, convalescence in the majority of instances being pretty well established, so that the patient is able to walk about, by the end of the second or third month from the time the neuritis first became manifest. The alcoholic form is not infrequently slow in reaching its height. I have under my care at present a patient who suffered from neuritic pains, with absent knee-jerks, for eight months before the paralysis became so great that he was compelled to remain in bed. During the last two or three months of this period he was decidedly ataxic in the legs. In the majority of cases of multiple neuritis not due to diphtheria the disease is one or two months in reaching its acme; then it remains stationary for one, two, or three weeks, after which apparent recovery takes place in from a few to several months. It must be remembered that the muscular strength is not regained for several months after the patient is able to resume his duties. The parts that are first affected are usually the most seriously involved, and are the last to resume a normal condition. The legs, as a rule, improve before the hands and arms, although occasionally this order is reversed. The feet, and sometimes the hands, especially around the nails, remain hyperesthetic long after all spontaneous pain has subsided. Relapses greatly lengthen the course of the disease.

The vast majority of cases of multiple neuritis result in recovery. In a few cases the trunk-muscles, including the intercostals, are affected; then if the diaphragm becomes paralyzed, death takes place from failure of respiration. These are acute and rapid cases, and not infrequently end in death at the end of from six to ten days or two weeks. Cardiac failure in alcoholic and diphtheric cases sometimes causes sudden death. In a few the patient is worn out by pain, the annoyance of bedsores, and the presence of bronchitis. In such cases it is probable that the spinal cord is affected. In alcoholic cases, cardiac, renal, and hepatic complications may lend gravity to the prognosis. Mental failure is a common complication of the alcoholic variety of multiple neuritis, but it usually passes away during convalescence. Sometimes there is simple failure of memory for recent events, but in typical cases patients become delusional and conceive the idea that they go out each day and take long walks, although they may be so completely para-

lyzed that they are unable to stand or even flex and extend the feet.

The treatment in the early stage of the acute cases consists of rest in bed, protecting the extremities from changes in temperature by means of flannels (when there is pain the flannels next to the skin should be kept moist by frequenly wringing them out in hot water), warm daily baths, if they do not inconvenience the patient too much, keeping the bowels open, and giving a febrifuge when there is a rise of temperature. As soon as the acute stage has subsided, massage and electricity and the internal administration of strychnin, arsenic, quinin, and iron are indicated. The nutrition should be maintained throughout the course of the disease by means of good, nutritious food, of which animal food should form a large proportion during convalescence, and cod-liver oil may be added to the list of nutrients. Relapses may be prevented, as a rule, by protecting the affected parts from cold by means of flannels worn next to the skin. Massage should not be resorted to while the nerves and muscles are sensitive, but gentle rubbing of the limbs from the distal portions toward the body is often grateful to the patient early in the disease. It is doubtful how much the galvanic current hastens resolution of the nerves and muscles, but the nutrition may be partially maintained and extreme atrophy of muscular tissue prevented, by causing gentle contraction of the paralyzed muscles until the patient regains voluntary control over them. When the muscles readily respond to the faradic current this may be used, but the current should be no stronger than is necessary to effect gentle contraction of the most affected muscles. In the majority of cases the faradic current will not produce muscular contraction in the extensors of the wrist and the anterior tibial and peroneal groups. For all muscles that will not respond to the slowly-interrupted faradic current of moderate strength the interrupted galvanic must be used, taking care not to exhaust the muscles by prolonging the séances to too great a length, and effecting too vigorous contractions. From three to five minutes is long enough for each of the largest groups of muscles, and a slight muscular contraction is less likely to do harm, and is capable of doing more good than vigorous movements. Electricity for this purpose may be applied daily or every alternate day. It is your duty to prevent troublesome contractures of the flexor muscles of the legs and arms, with resulting deformity of the feet and hands, such as this man presents. This may be done by keeping the feet at right angles to the legs by meane of sand-bags placed at the soles of the feet, and occasionally placing the forearms and hands on padded splints.

I have nearly finished what I had intended to say about this case, but have not referred, except in the examination, to the unilateral facial paralysis. This has come on some nine months after the beginning of the attack of multiple neuritis. At my first visit to this patient there was no paralysis of the face, but about two weeks subsequently I first observed it. He had been lying near an open window, and the affected side of the face was exposed to a draught of air. In all probability it has no connection with his general trouble. It is a local neuritis and does not modify the prognosis at all. Facial paralysis during the acute stage of multiple neuritis would, as a rule, excite grave apprehension, as it would indicate that the trouble was affecting nerves not usually involved in this disease, and fear of cardiac and respiratory failure might justly be entertained.

CLINICAL MEMORANDA.

TYPHOID FEVER.

A Report of Three Cases Treated by the Chlorin-Solution Recommended by J. Burney Yeo, M.D., of London, England.

BY J. MOSELEY KERR, A.M., M.D.,
OF COLUMBUS, OHIO.

IN the treatment of typhoid fever one favors the Brand method, while another advocates the ingestion of large quantities of water, thinking to drown out the offending bacillus. Some place all their confidence in a mixture containing carbolic acid, others in turpentine, and so on. Many of these methods, while successful in some cases, are either too cumbersome or else are too uncertain for general practice.

Always having been interested in this subject, I was at once attracted to Dr. J. Burney Yeo's article (June number of the *American Journal of the Medical Sciences*), in which he advocates the use of a chlorin-solution, a rigid milk-diet, and perfect cleanliness, not only of the outside of the body, but also of the inside.

The solution as made by him is as follows: Into a twelve-ounce bottle put thirty grains of potassic chlorate and pour on this sixty minims of strong hydrochloric acid. A greenish-yellow gas is at once liberated. Close the bottle with a cork and agitate the mixture gently until the bottle is filled with gas, then pour water into the bottle, little by little, closing the bottle and shaking well at each addition until the bottle is half filled. Add to this mixture from twenty-four to thirty-six grains of quinin, and then fill the bottle with water. Syrup of orange-peel can be added to disguise the taste. The dose Dr. Yeo recommends is one ounce from every one to four hours according to the severity of the case. His methods are so plain and easy, and his reasoning so clear, that I decided to adopt his suggestions at my first opportunity. He urges very strongly the early administration of this combination, before the bacilli have had a chance to spread or do their destructive work.

CASE I.—H. B., was a little girl, three-and-a-half years old, of good family history, well-nourished and of good previous health. The child took sick gradually, and for several days the only symptom noticed by the parents was an unusual listlessness.

I was not called until July 23d, after the child had been complaining for about a week. I found her somewhat stupid, complaining of pain in the epigastric region, the bowels constipated and occasional vomiting. The temperature on the first day seen was 102.8° in the morning and 103.6° in the afternoon. It was not until July 27th that I made a positive diagnosis of typhoid fever, when I ordered the patient placed upon an entire milk-diet, and a teaspoonful of the chlorin solution, to be administered every two hours. The bowels were watched carefully and kept open by enemata and occasional doses of calomel. The temperature from the time this solution was commenced ranged as follows: July 27, A. M.,

101.2°, P.M., 103°; July 28, A.M., 100.2°, P.M., 102.4°; July 29, A.M., 101.2°, P.M., 102°; July 30, A.M., 99.8°, P.M., 100.2°. It kept gradually falling until by the 5th of August it had reached normal both morning and evening, the morning temperature having been normal for several days. The child convalesced nicely and made an uninterrupted recovery.

CASE II.—A. A., was a young man, nineteen years old, a laborer, of good family history, with comfortable surroundings, and who had always enjoyed good health. He was taken sick August 11th with a severe headache, loss of appetite and marked drowsiness. I was not called until the 15th, when in the morning his temperature was 103.6°, the pulse 106, and respirations 20. In the afternoon his temperature rose to 104.4°. The symptoms pointed so clearly in my mind to typhoid fever that a bottle of the chlorin-solution was ordered, a teaspoonful to be given every hour. The only nourishment he received was diluted milk in quantities that seemed to be easily assimilated. During the first and a portion of the second week there was considerable delirium and several mild hemorrhages from the nose. The dose of the medicine was doubled, the symptoms subsided, and he rested quite comfortably during the balance of the attack.

On September 8th the young man had for several days been taking a preparation of beef-peptones and was convalescing without incident. I copy from my notes of this case a record of his temperature: August 15, A.M., 103 6°, P M., 104.2°; 16th, A.M., 101.2°, P.M., 102.4°; 17th, A.M., 100.4°, P.M., 101.6°; 18th, A.M., 100.2°, P.M., 102.2°; 19th, A.M., 101.8°, P.M., 103° (dose doubled); 20th, A.M., 101°, P.M., 102.2°; 21st, A.M., 100.6°, P.M., 101.8°; 22d, A.M., 101°, P.M., 102°; 23d, A.M., 100°, P.M., 102.4°; 24th, A.M., 99.8°, P.M., 102.2°; 25th, A.M., 99.8°, P.M., 101.4°; 26th, A.M., 99.8°, P.M., 101°; 27th, A.M., 99°, P.M., 100.8°; 28th, A.M., 99.4°, P.M., 100.6°; 29th, A.M., 98.8°, P.M., 100.2°; 30th, A.M., normal, P.M., 100°; 31st, A.M., 98.2°, P.M., 99.6°; September 1, A.M., normal, P.M., 100°; 2d, A.M., 98.8°, P.M., 99.4°; 3d, A.M., normal, P.M., 99.6°; 4th, A.M., 98.2°, P.M., 98.8°; 5th, A.M., normal, P.M., normal.

CASE III.—L. E., was a four-year old boy, of a healthy though neurotic family. His health had been previously good. This case and Case I are similar in many respects. I did not see the patient until the middle of the second week, when he was brought to my house by his sister, who said she wanted to know what was the matter with the boy. He was usually very lively, but for the preceding ten days he had been peevish and stupid and had no appetite, complaining of pain in his stomach and bowels. His temperature was found to be at that time 104.4°, the respiration and pulse rapid. He was sent home immediately and ordered put to bed. Calomel in $\frac{1}{10}$ gr. doses was prescribed for him every half-hour until the bowels acted, and aconite in minim-doses every hour for the fever. The temperature the next day was 103.6° and 104.6° in the morning and evening respectively.

When the possibility of his having typhoid fever was suggested to his parents they made light of it and said they were positive it was not, as they said the first symptom they noticed was a bright scarlet rash which completely covered his body, but which also disappeared quite rapidly, no trace of it being apparent when the child was first seen by me.

However, I placed him on teaspoonful-doses of the chlorin-solution every two hours, together with a milk-diet and a care for the bowels. The symptoms and course of the attack clearly indicated typhoid fever, but how he was infected will probably always remain a mystery, as he had not been away from home, and the family used the city hydrant-water, the families in the other two cases being supplied with well-water.

On September 15 the child was allowed to partake of some solid nourishment, and made an uneventful and rapid recovery. The course of the fever in this case was similar to that of Case I.

In all of these cases there was the rose-colored eruption, the furred tongue, the headache, pain in the right iliac region, constipation, and delirium. During the whole course of treatment in each case nothing was given after the diagnosis was made other than the chlorin-solution, except daily sponge-baths, enemata of hot water or broken doses of calomel and Epsom salts to keep the bowels clean. The diet was milk, diluted about one-half with water and given every two hours in quantities that proved to be thoroughly assimilated; the idea being to give sufficient nourishment, but not to have the bowels clogged with undigested and decomposing matter. It will be seen by reference to my notes that the course of the fever did not extend over three weeks, and that the range of temperature was lowered soon after the administration of the chlorin-solution, and that the fastigium did not last over one week. No complications intervened, each case convalesced and made a speedy recovery without relapses or sequelæ.

FLAGELLATE PROTOZOA IN THE FRESHLY PASSED URINE OF A MAN; PRELIMINARY NOTE.

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A. B., twenty-seven years of age, came to me for the treatment of frequent urination. For a number of years the patient lived in Texas, where he had frequent attacks of intermittent fever. About two years ago he had pneumonia, and during convalescence developed hematuria, diagnosticated as malarial. The hematuria finally subsided, but the attacks of frequent urination became more severe and the patient noticed that a whitish cloudy substance was passed with the last few drops of urine, especially at times when micturition was unusually painful and frequent. A few days before I first saw the patient the urine was examined by a colleague, who found pus and blood, and he gave remedies. A few days later I saw the patient. The symptoms were much improved. The urine passed in my presence was clear, acid, with a specific gravity of 1020. It contained numerous whitish specks, about the size of a small pin-head, or slightly larger, somewhat resembling the caseous bits passed in some cases of tuberculosis of the genito-urinary tract, and smaller and less opaque than gleet-threads. (The patient, whose veracity I have no reason for doubting, denies coitus.) Under the microscope these showed pus-corpuscles, epithelial

cells, and a number of bodies slightly larger than pus-cells, of a peculiar hyaline appearance, which struck me as being so remarkable that I immediately began to dictate a note about them. It soon became evident that the bodies were animal parasites, and after a little observation they were identified as belonging to the genus trichomonas. In the identification and further study I have received much valuable assistance from my colleague, Dr. J. Playfair McMurrich, Professor of Anatomy in the University of Michigan, to whom I express my thanks.

The bodies are usually from 0.015 – 0.020 mm. long, and from 0.008 – 0.015 mm. wide, of the shape of an apple-seed, oval, ovoid, or irregular. At one end are from two to four flagella; at the other, sometimes, a flagellum-like tail, though this is not constant. At one side, running back from the base of the flagella, is an undulating membrane. This is not always visible. The structure of the body is finely granular, sometimes almost homogeneous, occasionally containing coarser granules resembling cocci. There is an oval nucleus with a long narrow chromatin-body. There is no mouth and no evidence of internal structures. Vacuoles are sometimes present, but there is no contractile vesicle. Besides the ciliary motion of the flagella, and that of the undulating membrane, the organism is able to change its form, to form pseudopods and to move by expanding and contracting the body.

Since the first observation I have made many others and have demonstrated the organisms to a number of colleagues. The fresh urine always contains the organisms, sometimes in large numbers, always in the bits mentioned; these are passed in the last few drops. The condition of the patient is somewhat improved.

The organisms resemble closely *Trichomonas vaginalis* Donné, as described by specialists. (The descriptions in nearly all books are faulty; that of Bütschli, in "Protozoa," in *Bronn's Klassen und Ordnungen*, Abth. ii, is the best.) Only three other cases in which they have been found in freshly passed urine (not that of women), seem to be recorded; those of Künstler (*Journ. de Méd. de Bordeaux*, 1883-84, xiii, p. 249-250), Marchand (*Centralblatt für Bakteriologie und Parasitenkunde*, Bd. xv, 1894, No. 19-20, p. 709) and Miura (*ibid.*, Bd. xvi, No. 2, p. 67).

In many respects my own case is remarkable and peculiar. I am now carrying on investigations with the organisms, which I purpose to report later, with a consideration of similar and allied observations.

MEDICAL PROGRESS.

Stenosis of the Upper Air-passages from Syphilitic Adhesions.—At a meeting of the Berlin Laryngological Society, HEYMANN (*Berliner klinische Wochenschrift*, 1894, No. 33, p. 766) reported the case of a woman, thirty-four years old, who, among other syphilitic manifestations, presented ulceration of the posterior wall of the pharynx, which remained uninfluenced by anti-syphilitic treatment, so that after the lapse of a number of months the palate also became involved. At the same time gummatous ulcers had formed upon the epiglottis and at the entrance of the larynx. The ulcerative process was followed in part by thickening and in part by destruction of the epiglottis, together with progressive stenosis of the pharynx. The vocal bands remained unaffected. A complicating acute angina, with peritonsillar abscess-formation, rendered high tracheotomy necessary. From this attack and the attendant operation the patient recovered satisfactorily in the course of ten days. In the sequence of large doses of iodids the lesions in the larynx and pharynx became cicatrized. The posterior arches became adherent to the posterior wall of the pharynx, so that there remained but a small round opening into the nares. The tonsils were distorted toward the middle line. Below the opening into the nares, and upon the posterior wall of the pharynx, were to be seen radiating cicatricial bands, together with reddened areas, in part eroded. The base of the tongue upon both sides was adherent to the posterior wall of the pharynx, and there remained but a small, oval, and somewhat irregular opening, perhaps as large as the thickness of a finger. Changes took place in the right vocal band, which became swollen and restrained in movement. The striking feature of the case lay in the fact that the process could not be stayed by the most active therapeutic measures, and that relief was afforded only after the performance of tracheotomy.

In a second case, a young man with hereditary syphilis remained in fairly good health until the age of fifteen, when hoarseness appeared, which resisted various therapeutic measures. The upper portion of the soft palate presented an opening of irregular size, with smooth, cicatrized margins and absence of the uvula. The right posterior half-arch was adherent to the wall of the palate. The posterior wall of the pharynx presented a small cicatrix. The right half of the epiglottis was smaller than the left, and the epiglottido-pharyngeal ligament was thickened and shortened. The right arytenoid was increased in size and dislocated inward, so that it projected into the cavity of the larynx. The right vocal band was immovable. The left side of the larynx was practically normal. Below the free margin of the vocal bands was a muscular membrane involving the anterior four-fifths of the glottis, and extending further backward upon the left side than upon the right. It was proposed to divide this membrane and dilate the larynx with bougies.

A third case occurred in a girl, eleven-and-a-half years old, affected with hereditary syphilis, who presented an atrophic condition at the base of the tongue and upon the left side a gumma. The posterior half-arches, and particularly the left, were adherent to the posterior wall of the pharynx. The uvula was reduced in size by cicatricial contraction. The root of the tongue was adherent to the lateral walls of the pharynx and in part to the posterior wall. The epiglottis was almost completely destroyed and formed an irregular prominence. From its lower portion a cicatricial fold pursued its way backward toward the arytenoid cartilages. The right vocal band was quite intact; the left was largely destroyed and the remainder distorted from cicatricial contraction.

Auditory Vertigo Caused by Working in Compressed Air.—CURNOW (*Lancet*, 1894, No. 3715, p. 1088) has reported the case of a man, twenty-seven years old, who for a number of years had been engaged in the excavation of

tunnels, in some of which compressed air was used. He had never felt any ill-effects from his work, until, on one occasion, after walking nearly three miles toward home, he became faint quite suddenly, and would have fallen had he not been supported. He experienced a sudden noise in his left ear and felt quite deaf, although previously his hearing had always been good. He also felt giddy, neighboring objects appearing to revolve about him. He had also slight cutting pain in his knees. He had no epitaxis, although he stated that this is common among workers in tunnels. When seen, he was in a collapsed condition, with great pallor and a cold sweat on the forehead. The respiration was hurried; the pulse 66; the temperature 96°. He was tremulous and unable to stand. He complained of intense giddiness, which was not influenced by position, and was experienced when sitting down and when lying in bed, surrounding objects appearing to revolve about him. He had loud, booming noises in his ears, particularly in the left. These were uninfluenced by inflation of the tympanum. He vomited repeatedly when the attack came on, and the sickness lasted until after his first night in the hospital. There was well-marked horizontal nystagmus, especially when the eyes were directed to the right. There was also a small amount of vertical oscillation in both eyes. Hearing was much impaired on the left side, a loud-ticking watch being only faintly heard on contact with the mastoid. When the watch was placed on the forehead or between the teeth it was always better heard on the right than on the left side. Both tympanic membranes appeared quite healthy, and in neither auditory canal was there an undue accumulation of cerumen. There was no oculo-motor palsy. The pupils reacted well to light and in accommodation. In both eyes the fundus was normal. Taste and smell were not affected, and there was no headache. The gait was uncertain and hesitating, but spastic and ataxic signs were absent. In walking there was a tendency to reel and fall toward the right, which became more marked on turning around to the right. When the eyes were closed the station was unsteady. As the effects of the shock passed off, the patient's general condition improved, but the vertigo, nystagmus, tinnitus, and deafness persisted. Walking for any distance was attended with reeling. It is reasoned that the most probable explanation of the case is hemorrhage from the vessels distributed to the semicircular canals, resulting from the difference between the ordinary pressure of the air and that under which the man was working.

THERAPEUTIC NOTES.

The Treatment of Diphtheria with the Antitoxin.—BÖRGER (*Deutsche medicin. Wochenschr.*, 1894, No. 48, p. 902) has reported the results obtained from the employment of Behring's serum at the medical clinic of the University of Greifswald. Thirty cases were treated between August 6 and November 3, 1894, in all but two of which diphtheria-bacilli were found. Two cases died, a mortality of 7 per cent.; 28 recovered, 93 per cent. Tracheotomy was necessary in 5, one of which died. Among 313 cases of diphtheria treated from October, 1893, to September, 1894, 46 died, a mortality of 14.5 per cent. Deducting 20 cases treated with the antitoxin and 70 others in which either bacteriologic examination was not made, or the diagnosis was not indubitable, there remain 223 cases, among which there took place 46 deaths, a mortality of 20 per cent. The employment of the antitoxin was, as a rule, followed by improvement in the appearance of the diphtheric process and by reduction of temperature, but the albuminuria was not prevented, and no direct influence upon the heart was observed.

At a recent meeting of the Medical Society of Königsberg, HILBERT (*Deutsche med. Wochenschr.*, 1894, No. 48, Suppl. No. 18, p. 142) made a report of the results obtained in the prevention and treatment of diphtheria with the antitoxin. A statistical study had shown that one-fifth of the cases originated by contagion at home. Protective inoculations with the antitoxin were made in 64 cases in 25 families, four strengths of serum being employed, of which at first 0.5 c.c., and subsequently 1 c.c., was employed. The diagnosis in the cases of the sick children was established bacteriologically. Of 10 children treated with Behring's normal serum, 4 were attacked with diphtheria; of 8 treated with the sixfold strength of Aronson's serum not one was attacked; of 18 treated with the thirty-fold strength of Aronson's serum 2 were attacked; and of 28 treated with the sixty-fold strength of Behring's antitoxin 1 was attacked. In the inoculated children attacked the disease pursued a mild course and terminated favorably. In the families treated four adults not inoculated were attacked with diphtheria. Eleven cases of diphtheria were treated with Behring's serum; 8 were either mild or of moderate severity; in 1 the larynx was slightly involved; in 2 there was marked stenosis of the larynx. All recovered.

Untoward Effects of the Antitoxin of Diphtheria.—CNYRIM (*Deutsche medicin. Wochenschr.*, 1894, No. 48, p. 898) has reported the cases of two clinical assistants who were attacked with angina, attended with deposits in the pharynx, and in both of which serious symptoms followed the employment of Behring's serum. In one of the cases the diphtheric nature of the affection was established by bacteriologic examination. In the first case an injection of 10 c.c. of serum No. 2 and another of 10 c.c. of serum No. 3 were made on successive days, and the throat-affection soon subsided. In the course of a few days, however, an urticarious eruption appeared, with elevation of temperature, increased frequency of pulse, glandular enlargement, coated tongue, headache, general malaise, and articular and muscular pains. These symptoms continued for nearly two weeks, gradually disappearing, but leaving the patient in a debilitated and irritable condition. In the second case a single injection of 10 c.c. of serum No. 1 was made. Several days after the throat-manifestations had disappeared the appetite became impaired and the sleep disturbed. There was a constant sense of heat, with free perspiration on slight exertion, malaise, jerking of the lower extremities, pains in the neck and arms, elevation of temperature, glandular enlargement, urticarious eruption, paresthesia, and loss of flesh. The symptoms in this case likewise continued for two weeks, also leaving the patient debilitated. The injections were made with the greatest of care, and the serum was derived from a responsible source, so that the untoward symptoms in both cases are ascribed to a direct action of the serum.

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THE TREATMENT OF DIPHTHERIA WITH THE ANTITOXIN.

(Continued from page 673.)

For the quantitative estimation of the strength of solutions of diphtheria-antitoxin, BEHRING has set up as a standard a so-called "normal serum," by which all others may be measured. Of this one-tenth of a cubic centimeter when injected together with ten times the minimal dose of diphtheria-poison fatal for guinea-pigs weighing 300 grams prevents the occurrence of any ill effects. One cubic centimeter of the "normal serum" is spoken of as a "normal antitoxin-unit" (BEHRING), or as an "immunizing unit" (EHRLICH). The serum No. I, as prepared at Höchst has from fifty to sixty times the strength of BEHRING'S normal-serum, and, as the antitoxic value varies slightly in different samples of serum, the fluid is usually put up in small vials, to be used at one dose, each vial containing 600 antitoxin-units (8 to 12 c.c.). EHRLICH, KOSSEL, and WASSERMANN immunized goats and obtained a serum of which 1 c.c. contained 60 immunizing units, which they used in the treatment of some two-hundred children in the Berlin hospitals. ARONSON, who carried on extensive immunizing experiments in the large chemic works of Schering, claimed to have prepared a serum by special methods which possessed two-hundred times the strength of BEHRING'S normal-serum. Some of ARONSON'S serum has been tested by BEHRING and BOER, who state that the Schering manufactory has made a mistake of more than 60 per cent. in favor of its product. The strongest serum as yet prepared is the Höchst serum No. III, which is one-hundred-and-forty times the strength of the normal-serum, and is sold in vials each containing from 1500 to 1600 antitoxin-units.

Concerning the clinical use of the curative serum one fact seems to be definitely established. The earlier the treatment is begun the less is the amount of antitoxin required and the greater are the chances of success. When we consider how quickly after the onset of a diphtheric infection alterations histologically demonstrable may appear in the nerves, heart-muscle, and kidney, the reason is obvious. If we are to believe the statistics that have been published, almost 100 per cent. of the cases treated with the serum at the beginning of the disease or during the first forty-eight hours recover. That the results in general are startling and very gratifying, no one will deny. The cases treated in Germany, France, England, and America now number many hundreds, altogether over one thousand, and the death-rate as given by BEHRING, EHRLICH, and KOSSEL in Berlin, and by ROUX and others in Paris, is certainly considerably lower than under any other method of treatment.[1] It is claimed that the results might have been even more favorable had larger doses of the serum been employed. EHRLICH, KOSSEL and WASSERMANN recommended for mild cases a first dose of 200 units, for severe cases a first dose of 400 units, and suggest that the total amount required for a single case will, according to the severity, vary from 500 to 1500 units. SEITZ recommends intervals of ten hours between doses, and states that complications like pneumonia are not to be considered as contra-indications. KOSSEL suggests that 600 units (the contents of one flask of No. I serum) be given for fresh cases on the first or second day of the disease; that 1000 units (one flask of No. II serum) be the dose for cases of longer than two days'

[1] Loeffler in a recent article asserts that the local application of a mixture of ferric chlorid, toluol, menthol and alcohol in fresh cases of diphtheria, kills the bacteria almost immediately, and claims that the cases treated in this way showed a greatly diminished mortality as compared with others occurring in the same epidemic in which ordinary methods of treatment were employed.

duration, or for especially severe cases on the first or second day, or for cases in which the larynx is already implicated; and that from 1500 to 1600 units (one flask of No. III serum) be given to adults or even to children in whom the gravest form of the disease is encountered. In favorable cases the amelioration of the general symptoms, and the lowering of the temperature and of the pulse-rate soon become apparent. It is claimed, further, that sequelæ, acute nephritis or heart-paralysis for example, are rendered less frequent by the serum-treatment; but these have occurred in a number of cases, and already relapses, sometimes fatal, after injection are on record.

Preventive injections have been used with success to a considerable extent. If an epidemic continues, the preventive injection must be repeated after a certain interval. The serum in the doses employed appears to be harmless. It was at first stated that one-tenth of the dose required to cure a mild case of infection once started was sufficient to immunize against infection, that is to say, 60 immunizing units would represent an ordinary protecting dose. BEHRING and EHRLICH have lately found that this dose is occasionally insufficient (out of 10,000 individuals receiving 60 units, 10 developed the disease), so that 150 units are now recommended for preventive inoculation. It appears, too, that the protective influence of the serum lasts the longer the greater the number of antitoxin-units injected. While a dose of 60 units in the majority of cases protects an individual from infection for from two to six weeks, it may be expected, according to BEHRING, that a dose of 150 units will protect for from ten to fifteen weeks.

Mild cutaneous eruptions have occasionally been observed following the injections—a simple erythema, an urticaria, and in one case an outspoken erythema multiforme. There are a few observations recorded in which after from eight to fourteen days complaint was made of pains in the joints and limbs, in a few cases accompanied by swelling, and in one by considerable fever; but such symptoms were always transitory. It was thought by VON RANKE that patients treated with the serum showed a marked tendency to develop a peculiar form of pneumonia, an opinion which his later experience corrected.

The serum apparently has a definite effect on laryngeal complications, and it is held that if at the time of injection the larynx is not involved it does not become diseased later (KOSSEL).

The percentage of cures after tracheotomy is increased somewhat by the serum-therapy. In France, where intubation is common, the time during which the tube has to be retained is shortened. In the reports of ROUX, MARTIN, and CHAILLON, it is stated that in future tracheotomy in diphtheria will be entirely replaced by intubation and that "*le tubage est le complément de la serum-thérapie.*"

One serious limitation to the success of the antitoxin treatment which must have been foreseen, and which has been made evident by autopsies, is to be found in the fact that mixed infections frequently occur in diphtheria. Streptococci are very often present in the throat in association with the diphtheria-bacilli, undoubtedly contributing to the general intoxication, and it is a notorious fact that in many of the severer cases of diphtheria we have not to deal simply with a local infection, with absorption and intoxication, but in addition with a general systemic infection with pyogenic cocci. In cases such as these but little can be hoped for from the treatment with diphtheria-antitoxin, if it is antidotal only to the products of LOEFFLER'S bacillus. On the question of the specificity of the action of the serum of immunized animals we shall have more to say on a subsequent occasion.

There are a whole series of interesting points concerning the origin, nature and action of the antitoxic substances which are worthy of consideration, but a few only can be here referred to. The consensus of opinion just now seems to be that the antitoxins are to be looked upon as the products of the animal cells and tissues, that in fact immunity is at bottom like the processes of metabolism, a *cellular* problem. It has been shown (for tetanus) that if blood be taken from time to time from an immunized rabbit, until finally a quantity has been removed equal to the total amount of the blood normally present in the body, there is no marked diminution in the antitoxic activity of that which remains.

As to the action of the serum, it would seem that the term antitoxin is a misnomer if by it a direct chemic antidote is understood. BEHRING thought that inasmuch as on mixing a solution of the diphtheria-toxins and the serum of an animal immune to diphtheria in a test-tube the mixture when injected proved innocuous, the substances in the serum must have *destroyed* the toxin. BUCHNER has always combatted this view, and has brought experimental

evidence forward to confute it. ROUX has also recently formulated objections to BEHRING's original view, and proves that in all probability the action of the antitoxin-serum is *indirect*, and that it influences the living cells of the tissues, lessening their susceptibility to the bacterial poison. BUCHNER thinks that serum-therapy must be looked upon as a rapid method of immunizing the cells of the body. If this be the case, however, the *passive* immunity conferred by the injection of the serum must differ very much from the *active* immunity which a patient acquires when he has recovered from a genuine infection.

What the ultimate fate of serum-therapy will be it is as yet too early to say. Diphtheria offers an excellent field for the testing of an antitoxin-treatment, for (in the absence of accompanying secondary infections) it is an excellent example of an almost pure bacterial *intoxication*; the bacilli are generally confined to the throat, the poisons and scarcely any of the bacilli going over into the blood and tissues. The disease is acute, the death-rate is ordinarily high, so that it does not take long to pass judgment as to the result of any therapy. The disease, as BUCHNER has pointed out, is a much more preferable one for study than is tuberculosis, since the latter approaches more nearly to a pure *infection*. Moreover, tuberculosis being chronic in its course and subject to spontaneous exacerbations and ameliorations, conclusions as to the efficacy of new therapeutic measures directed against it must always be associated with a certain degree of doubt.

It is ardently hoped that the serum-treatment of diphtheria will not prove so disappointing as the tuberculin-treatment of tuberculosis. Both are founded upon a scientific basis—both are the outcome of animal experiment in connection with artificial immunity; both represent attempts to approach the *vis medicatrix naturæ*. The antitoxin-treatment is evidently a step in advance of the tuberculin-treatment, for, while in the latter toxins (bacterial proteins in the main) were introduced into the human being, there to set up a reaction which was to lead in time to the formation of healing substances, in the former the toxins (metabolic products with some bacterial protein) are inoculated into an animal, the animal suffers the reaction, and manufactures in its body the curative substances, which are then transferred, ready-made and active, to the human being. That healing substances are present in the serum of immunized animals is certain; that as EMMERICH has lately said, careful, quiet work will in the long run lead to results which will insure a satisfactory therapy for infectious diseases, seems probable. But now, as always, there should be hesitation before transferring the results of laboratory-experiments to the field of clinical medicine, where, as in manners, the advice of TALLEYRAND holds good, "*Surtout, messieurs, peu de zèle.*"

SHALL PHYSICIANS, OR SHALL LAY TRUSTEES, BOARDS OF CHARITIES, ETC., DECIDE AS TO MEDICAL MATTERS?

IN THE MEDICAL NEWS of December 8th we adduced a flagrant instance of the outrageous impertinence of laymen in their office of hospital-trustees in disposing of the services of physicians in a dictatorial and unjust manner. We little expected that a more striking illustration of the same spirit would so soon be shown, as happened the next week in Philadelphia. A member of the visiting staff of a great hospital was displaced ignominiously and without warning, without an official charge being made against him, or an official opportunity being offered him for replying to possible charges. Not even an official notice was sent him of his summary dismissal. From newspaper reports one learns that the reasons for this remarkable proceeding were that the physician thus contemptuously treated, in order that he might obtain blood from the patient's finger for purposes of diagnosis and investigation, had not given quinin to a patient so soon as he might have done.

Now, supposing that this information is correct, it must have come from some one. If it came from the birds of the air, or from patients, or from nurses, in the name of frankness let the spies be interrogated; let the charges be made openly. If it came from some rival or envious physician, then all the more imperative is the reason for disclosing the fact. To sentence a man on secret charges, supplied by anonymous persons, without hearing but the side against him, without giving him a chance to know of, or to reply to the indictment—all this seems to betray the consciousness of those who know their cause cannot bear examination in the light of day and by dispassionate minds.

By this action the lay officers of the hospital by implication adopt as a rule of the hospital that experimental studies shall not be allowed by the

medical staff. In rebuttal of this rule they should be asked a few questions:

1. How about the justice of *ex-post facto* legislation? Would it not much better become officers of a public trust to first make the law and then punish the subsequent law-breaker, rather than to punish him for breaking a law as yet not enacted?

2. Instead of an unwritten decision of this kind as to experimental medicine, would it not be more orderly and business-like to enact such a rule in proper form, notifying all concerned, and thus give the medical staff (and the world!) an opportunity to know what rules shall guide professional practice?

3. In enacting such a law would it not be politic to exhibit some sign of becoming modesty by asking expert advice in a matter of the nature of which the legislators must of necessity be profoundly ignorant?

4. In enacting such an unwritten law in the recesses of their own self-supposed infallible private consciences, would they not avoid possible error and the derision of scientific men everywhere by first inquiring what is the rule of practice in the greatest hospitals throughout the civilized world?

5. Does the temporary possession of *power* to do an unjust thing give the *right* to do it, and give the right to do it discourteously, brutally, and without opportunity of the accused to defend himself?

About five years ago (January 4, 1890) the editor of THE MEDICAL NEWS, burning with righteous indignation, wrote justly bitter words against the action of the Board of this same hospital in a matter precisely similar to the recent occurrence of which we speak, and, bearing in mind the merit of consistency, we are to-day glad to put THE NEWS in evidence in the same cause.

In doing so, however, we must repeat and re-emphasize what we have often said before, that the fundamental guilt of this disgrace lies upon the professional conscience itself. If medical men were not so shamelessly greedy for these positions, if they were not so slavish to the dispensers of them, the lay dictators would not be so ludicrously arrogant in their distribution. No man having the good of his profession at heart should accept a position coming to him in such a way. If the profession had a proper self-respect, and if there were any decent professional unity, even a semblance of professional *esprit de corps*, such an indignity would be simply impossible. The entire staff should first protest, and if their protest is ignored, they should in a body resign, and professional opprobrium be visited upon any that should dare to take their places. If the profession were thus united, how long would the hospitals be carried on without physicians? The profession has the power to be the master, but it seems to prefer to be the obsequious servant. The good of medical science is in the long run for the good of the patient. This the fanatics forget or affect to ignore. Laymen should be taught that even medical men have some rights, and that a becoming respect is due the medical profession for the enormous charitable work it does.

The limits of proper experimentalism in medicine can be set only by medical men. The progress of medicine is of the utmost importance to the community, and laymen are not fit judges of the methods of the outworking of that progress. The growing spirit of dictation and arrogance on the part of self-constituted lay judges must be met by the voice of the whole profession in asserting that in medical matters pertaining to hospital management the decision shall rest with medical men.

EDITORIAL COMMENTS.

Protective Inoculation Against Cholera.—We have on previous occasions referred to the results of inoculations practised by Haffkine in some parts of India as a protective measure against cholera. The work is being continued as occasion warrants and opportunity offers. An unequivocally fair test of the value of the inoculation has not yet been recorded. Three interesting series of observations have, however, been recently made.

Four cases of cholera appearing among a population of 200 in a portion of Calcutta, 116 were inoculated, none of whom subsequently contracted cholera, while 9 cases and 7 deaths occurred among those that were not inoculated. Five of these nine were the only ones attacked in five respective houses, the inhabitants of which had in some instances been inoculated and in others not. The remaining 4 occurred in one house with 18 occupants, of whom 11 had been inoculated. Of 111 people in seven houses, 51 that had been inoculated were not attacked, while of the 60 not inoculated 7 were attacked with cholera, with 5 deaths. The most noteworthy fact is the absence of cholera among those inoculated.

At a gaol at Gya cholera broke out on July 9th, 6 cases occurring up to the 17th, with 5 deaths. On the 18th, 147 persons were inoculated, and on the 19th, 68 more, a total of 215 out of the 433 present at the time. Secondary inoculations were performed four or five days later.

Inoculated and non-inoculated were treated exactly alike in all respects. From July 20th to 24th, when all were in gaol, there occurred among an average of 211.2

inoculated 5 cases of cholera, with 4 deaths, and among 209 non-inoculated 7 cases, with 5 deaths. On July 25th it became necessary to remove the greater portion of the prisoners into camp, inoculated and non-inoculated being represented in fairly equal proportion. From this date to August 2d there remained in the gaol an average of 32.5 inoculated and 48.55 non-inoculated; among the former there was but a single case of cholera, and in this recovery took place, while among the non-inoculated there occurred 7 cases, with 3 deaths. During the same period there were in camp an average of 171.42 inoculated and 146.5 non-inoculated. Among the former there occurred 2 cases of cholera, with 1 death; among the non-inoculated 6 cases of cholera, with 2 deaths. It appears that any protective influence exercised by the inoculations became manifest increasingly toward the end of the treatment, *i. e.*, after a certain period of incubation, for during the first five days after the first inoculation there occurred among the inoculated 5 cases, with 4 deaths, and among the uninoculated 7 cases, with 5 deaths; during the first three days after the second inoculation, among the inoculated 3 cases, with 1 death, and among the non-inoculated 5 cases, with 3 deaths; and during the last six days there were no cases among the inoculated, while among the non-inoculated there were 8 cases, with 2 deaths.

At Lucknow one of the regiments was attacked in July with cholera, which had been present in a virulent form among the native population some months previously. The total strength of the regiment at the time was 773, of whom 133 had been inoculated in May of the previous year. Of 620 not inoculated, 120, or 18 per cent., were attacked, and 79, or 12.3 per cent., died; while of 133 inoculated, 18, or 13.5 per cent., were attacked, and 13, or 9.7 per cent., died.

These observations are interesting and significant. They seem to show that the inoculations have at least a temporary beneficial effect, of which practical advantage could be taken in the event of an epidemic of cholera.

Gonococci in the Blood in Cases of Gonorrheal Rheumatism.—As to the liability to constitutional infection in cases of gonorrhea an abundance of evidence has accumulated. The best known of the complications of this condition is inflammatory involvement of one or more synovial membranes. Less common, perhaps only less frequently observed, is involvement of the endocardium. The undoubted specificity of the secondary lesions, however, has hitherto not been incontestably demonstrated, and the question may fairly arise whether these be infectious or toxic from the circulation in the blood either of the gonococcus or of the products of its vital activity.

An interesting contribution to this important subject has recently been made by HEWES (*Boston Medical and Surgical Journal*, vol. cxxxi, No. 121, p. 515), who cites four cases of gonorrheal rheumatism, in one of which gonococci were, upon bacteriologic examination, found in the blood. Of five other cases of gonorrheal rheumatism, gonococci were isolated from the blood in two. In both sets of cases gonococci were present in the urethral discharge. The victims of specific urethritis appear to be unaware of the gravity of their disease, as regards both extension by continuity and systemic infection and transmission to others; and the facts are, perhaps, not sufficiently noted by medical men. The prophylaxis is simple and effective, and consists only in social purity and sexual abstinence.

The Advertising Newspaper and the advertising doctor are old friends and cronies. What an excellent opportunity the diphtheria-antitoxin business gives all the old regulars to air their opinions in the daily papers! They appear with astronomic (or gastronomic ?) precision just at the proper time. Every new treatment that flashes upon the bewildered public eye, but especially such as that by tuberculin and by antitoxin is certain to produce the same crop of interviews, in exactly the same style, and from precisely the same men. "Same old drunk!" Men who never treated a case of pulmonary tuberculosis or of diphtheria, and who never made a slide in their lives, pronounce with ludicrous dignity and authority (always according to newspaper desire and public prejudice) upon the whole matter. We would suggest to the newspapers that they save reportorial expenses by keeping already stereotyped the old forms of the interviews condescendingly given by their old medical standbys five and ten years ago. Barkis will always be willin', and the pronunciamentos, with the interchange of a few words, will always be identical. The doctor and his reporter have it all stereotyped; why should not the journal also?

Efficiency of Small Filters.—Messrs. Woodhead and Wood have presented to the *British Medical Journal* a special report on the efficiency of many forms of filters sold for domestic uses. They find that there is much irregularity in the quality of the same filter, and that nearly all forms allow organisms to pass. Experiments were made with water containing milk and very finely divided charcoal and ultramarine in suspension.

Tests were made of several filters which had been long in use without cleaning, and it was found that water which before filtration contained less than one-hundred points of microbic life to one cubic centimeter furnished a filtrate containing many hundred colonies. The fact that uncleaned filters may add largely to the microbic life of water passing through them has been generally suspected. The full report is not yet at hand, but it will be a valuable contribution to sanitary literature.

Low Death-rate in England.—The last quarterly returns of the Registrar-General for England show a marked decrease in the death-rate throughout the whole of England. In a total population of over twenty millions living in cities, the rate for the months of July, August, and September was 14.9 per thousand per year, while in rural populations aggregating nearly ten millions it was 12.7 per thousand per year. London has shown as marked a decrease as any part of England, and the diminution of sickness has been distinctly noticed. The favorable condition is ascribed to the cool, wet season that has prevailed. The deaths from zymotic diseases and from diarrhea have been especially low.

Subscription to the Index Medicus is a duty which every reader of these lines owes to his profession. Since our comment in THE NEWS of December 8th we have learned that it is highly improbable that the publication can be

carried on at Government expense. Unless a sufficient number of subscriptions can be received to pay the cost of continued publication this most valuable journal will be discontinued with the December number. For this purpose 800 subscriptions are necessary at $10 each. It would be a good plan to have blank forms pledging subscriptions and support laid before all medical societies, and the attention of members drawn to the duty.

SELECTIONS.

THE PURIFICATION OF DRINKING-WATER.

A REGULAR meeting of the Wistar Biological Society was held at the Wistar Institute on November 9, 1894. General Isaac J. Wistar presided. There was a discussion of the subject of "The Purification of Drinking-water, with Special Reference to the Water-supply of Philadelphia," which was participated in by Dr. William Pepper, Dr. A. C. Abbott, and Dr. Henry Leffmann.

After a brief introductory address by General Wistar, Dr. Abbott spoke of the natural methods of filtration of water through the soil, and said that the deeper the soil the poorer it was in bacteria. This change, however, was not the only one, as there was a marked change in the constitution of the water as found by its passage through the soil. Organic matter will have been found to have disappeared. Surface water in going through soil undergoes not only bacteriologic but chemic purification, and the most desirable water is that obtained from the deepest strata. It becomes important, he said, to know how Nature can be imitated so as to obtain this water, and the method is that of filtration by sand, passed through large stones, then gravel and sand to a fine sand at the top of the filter. The first waters passed through such a filter simply wash away the bacteria. This method, he said, was preëminently a biologic one. It is Nature's way, and is not only satisfactory, but meets sanitary requirements.

Dr. Abbott then alluded to the cholera-epidemic in Hamburg and a neighboring city in 1892, both of which obtained their water from the river Elbe. Hamburg supplied its people with water directly from the river, and with a population of 635,000 there were 18,000 cases and 8000 deaths, while in the other city, which filtered its water, in a population of 145,000, there were but 516 cases, with 316 deaths. There were 283 deaths to every 10,000 people where unfiltered water was used, and only 36 to every 10,000 where the water was filtered.

The biologic phase of the question, he said, was to consider the effect that impure water may have on health. In this connection he discussed the prevalence of typhoid fever, which, he said, was very high in Philadelphia, the average being 6.31 to 10,000 of the population. This is lower than that of Chicago, but higher than that of New York, Boston, Berlin, and Paris. It looked, he said, as if this disease should be charged to something used in common in the community—air and water—and the latter, by common consent, is believed to be the one that causes typhoid fever. The places where the deaths are fewer are where the water-supply has been purified. He showed how, in Chicago, the death-rate from the disease had been reduced by putting the in-take further out in the lake, and similar results had been obtained in other large cities, both in this and in foreign countries. If steps are taken here to correct the water-supply he believed that it would result in a reduction in the mortality that would exceed the most sanguine expectations.

Dr. Leffmann, who followed, pointed out that the main object of the precipitation-methods is to economize the filtering area, and that, by introducing in the water some ingredient which will collect the suspended matter in a coagulum, the operation of filtration takes place with greater rapidity. The best substance used to-day in the purification of water, he said, is aluminum sulphate, as such, or in the form of alum. In explaining the operation of this material, he said it removes any color from the water, as well as any turbidity, etc.

Dr. Leffmann also discussed the sand method of filtration, and that by the use of iron turnings. In the latter process the small pieces of iron are placed in a cylinder about as large as a hogshead, through which the water constantly passes. The iron is ground up slowly by the friction and rubbing, and by the chemic change that takes place the water is purified. He stated that he had had considerable experience with the iron method of filtration, and was satisfied that it was capable of doing good work, especially in waters decidedly turbid.

In reference to the subject of typhoid fever, Dr. Leffmann said that from the records of the Board of Health he found that in 1893 there were 453 deaths from the disease in the city proper. The district supplied by the East Park Reservoir, which includes Kensington, is tolerably free from typhoid fever, while in Kensington, when it received its water-supply from the station at Otis Street wharf, the mortality was much greater. In fact, the disease has mostly disappeared from the district, while in the district west of Broad Street, which receives its water-supply direct from the river, the disease is more prevalent. In Girard College, which is in this district, and which has about 2000 boys, there is scarcely a case of typhoid fever, because filtered water is used.

Dr. Pepper said that no community was in more urgent need of purified water than Philadelphia, where water is used to a larger extent than perhaps any city in the world. It was quite important, he said, that a method of filtration that had been shown to be so economical should at least be tried, pending a determination of the question of the ultimate water-supply of the city. He complimented the stand taken by Mayor Stuart and Director Windrim in advocating purification of the water by asking Councils for an appropriation for a filtering-plant at Belmont, and urged the members of the society to use their influence in promoting the scheme. For himself, he said, he did not permit his family to drink Schuylkill water unless it had been boiled, and the amount of drinking-waters purchased by people, he said, was enormous and scandalous.—*University Medical Magazine.*

A SUBSIDIZED PRESS.

THE *Druggist's Circular* tells us that the eleventh annual meeting of the Association of Manufacturers and Wholesale Dealers in Proprietary Articles was held at Delmonico's, in New York, on the first and second days of October. From a report of the proceedings we abstract the following:

Mr. Cheney, of Toledo, stated that he had a point to

give to advertisers. He has a clause in his contracts with publishers of newspapers to the effect that if the Legislature of the State in which the newspaper is published or Congress shall make any law interfering with or restricting the sale of proprietary goods the contract shall be void. When such a bill is introduced in the Legislature of any State, all he has to do to stop its passage is to call the attention of the newspapers in such State to the clause in their contracts with him, and they "do the rest." This, Mr. Cheney explained, was much cheaper than keeping a lobbyist at the various capitals, and subscribing $300, as he had been asked to do in the State of Illinois, to be used in the suppression of blackmailing measures. Mr. Cheney said that if it was the sense of the meeting to put his plan into the form of a resolution he would do so, but an amendment, thanking Mr. Cheney for his suggestion, was substituted and adopted.

We do not know who Mr. Cheney is nor the name of the medicine or food he makes, but we do know that the proposition he made, and which seems from the report to have been formulated and adopted by the association, is an attempt to subsidize the entire press of the country, and which is truly alarming.—*Cincinnati Lancet-Clinic.*

REVIEWS.

TUMORS, INNOCENT AND MALIGNANT: THEIR CLINICAL FEATURES AND APPROPRIATE TREATMENT. By J. BLAND SUTTON, Assistant Surgeon to the Middlesex Hospital, London. With two-hundred-and-fifty engravings and nine plates. Small 8vo, pp. 511. Philadelphia: Lea Brothers & Co., 1893.

THIS is a very interesting and instructive book. Mr. Sutton proposes a new classification of morbid growths on lines similar to those employed in biology, arranging them in four groups, each divided into genera, and these again into species, each of which may present one or more varieties.

The groups are: connective-tissue tumors, epithelial tumors, dermoids, and cysts. Of these groups the first contains twelve genera, and each of the others four. Among those of the first group we note neuromata, angeiomata, and lymphangeiomata; these, as representing tissues of special function, might perhaps be more properly placed in a separate group. The second group contains papillomata, epitheliomata, adenomata, and carcinomata. Under the third are found sequestration-dermoids, tubulodermoids, ovarian dermoids, and dermoid patches. The fourth includes retention-cysts, tubulo-cysts, hydroceles, and gland-cysts; the last-named having under it a subgroup of "pseudo-cysts," embracing four genera—diverticula, bursæ, neural cysts, and parasites.

Appended to the discussion of dermoids there is a chapter on teratomata, which is interesting, but seems to be superfluous. It is introduced, the author says, because certain species of these malformations are so very likely to be confounded with dermoids; but he mentions only one such instance, and that one of no material consequence.

Did space permit, we should very gladly give a further analysis of the views presented as to the species and varieties of morbid growths, and of the practical deductions drawn from them. A peculiar and valuable feature of this work is the very frequent reference to the analogous formations met with in the lower animals of the vertebrate class. Especially is this notable in the portion relating to dermoids, and it is emphasized in a chapter devoted to the zoological distribution of tumors.

As a general rule, we agree with Mr. Sutton's views in regard to treatment. But we are constrained to take issue with him when he says that in a large majority of instances of rectal carcinoma it is impossible to determine the seat of the disease, and advocates a preliminary celiotomy in the median line for the mere purpose of manual exploration, to be followed (the wound first made having been closed) by the formation of an artificial anus at a suitable point.

The chapter on the causes of tumors is a very interesting one. The problem of the genesis of morbid growths is to physicians somewhat as that of the origin of moral evil was to the theologians of a former time. In both cases we believe that in the last analysis the trouble is found to be a misplacement, or a hypertrophy, or an erratic development, of what is in itself normal. Mr. Sutton thinks with Cohnheim that, except in the sarcomata, epitheliomata, and carcinomata, an important part is played by *vestiges* and *rests*. By the former term are indicated "structures that are remnants of organs functional in vertebrates lower than man; those organs that are of importance to the embryo, but useless in the adult; and a few which, though utilized in the male, are useless or almost useless in the female, and *vice versâ*; as well as those structures which, as far as we know, serve no useful purpose in any vertebrate at present living, but were doubtless of importance in their ancestors." By *rests* are meant "detached fragments of glands and isolated portions of tissue and epithelium."

With regard to carcinoma our author justly says that a correct appreciation of its morphology is of the first importance as a prelude to the study of its cause. He thinks that in a large class of cases the coccidian theory may be accepted, although it fails altogether to explain the phenomena in many others. We should have been glad to find this whole topic of etiology discussed at much greater length; but indeed throughout the entire work the style adopted is very terse, as was needful for the treatment of so extensive a subject within such narrow limits.

On page 419 it is stated that "cervical cysts in children and cervical air-sacs in monkeys are *on all-fours*." What is meant by this absurd phrase we can conjecture; but it seems to us as inelegant as any of the "Americanisms" with which our brethren on the other side of the water are so prone to find fault.

The value of this book is greatly enhanced by profuse illustration and by clear and correct typography. We predict for it a deserved success.

A CLINICAL MANUAL OF DISEASES OF THE EYE, INCLUDING A SKETCH OF ITS ANATOMY. By D. B. ST. JOHN ROOSA, M.D., LL.D. Illustrated by one-hundren-and-seventy-eight engravings and two chromolithographic plates. New York: William Wood & Co., 1894.

THIS is an astonishing book! It seems to have been written to promulgate the author's peculiar and well-

known views concerning the diagnosis and treatment of refraction-anomalies. There is nothing in the work besides these views that is new and that required the writing of six-hundred pages to tell. To repeat the old saw, what is new in the book is not true, and what is true in it is not new. We sympathize entirely with the author in his denunciation of the excesses of the tenotomists, but that any sane ophthalmologist should assent to his own extravaganzas is beyond belief. His absurd worship of the divine ophthalmometer, his ignoring of anisometropia, and of any but of extremely high errors of refraction, his ignoring of muscle-imbalance, his distaste for mydriatics, his detestation of the idea of reflex neuroses due to eye-strain, his scorn of the thousand truths believed in and well-established by hundreds of careful and conscientious ophthalmologists—all these things are silly, wearying, and oppressive. The parts of the book referring to these things are crammed with as many reiterated errors as it is possible to be. The author should perform *harikari*, and name the advertising optician as his residuary legatee. A worse book to put in the hands of the student of medicine, the general physician or the young oculist, we cannot imagine.

But we advise the experienced and conscientious oculist to buy the book, in order to see how in the practice of medicine (*sic*) the very existence of the troublesome, the doubtful, or the mysterious can be denied existence, how the life-long experience and problems of careful men can be sneered at and dogmatized down, how far business, guesswork, and machinery, can be supposed to carry in the diagnosis and treatment of disease. If disgust can be conquered by a lively sense of the ridiculous, such a reader is promised much amusement.

ON CHOREA AND CHOREIFORM AFFECTIONS. By WILLIAM OSLER, M.D., Fellow of the Royal College of Physicians, London; President of the Association of American Physicians; Professor of Medicine Johns Hopkins University, and Physician-in-Chief Johns Hopkins Hospital, Baltimore; formerly Physician to the Infirmary for Diseases of the Nervous System, Philadelphia. 8vo, pp. x, 125. Philadelphia: P. Blakiston, Son & Co.

AS stated in the preface to this monograph, its contents are largely based upon observations made at the Philadelphia Infirmary for Nervous Diseases, an institution unique for the richness of its service, the fulness of its records, and the care given to the study of its cases. The work is a faithful reproduction of a disorder at once well known, and in some respects obscure, and accurately portrays the current conceptions of chorea in its varied aspects. In the introduction the following useful description is given: Chorea minor, classic chorea, as described by Sydenham; chorea major, an hysterical affection; pseudo-choreas, including the various forms of local or generalized habit-spasm or tic; and secondary or symptomatic choreas, dependent upon degenerative and irritative lesions of the motor cortex or path. Only the first and third of these groups are here considered, together with the chronic progressive forms of the fourth group described by Huntington. The general etiologic features and the clinical picture of chorea minor are given at length, but little light is shed on the morbid anatomy and pathology, although the suggestion is given that at least some cases are of infective origin. A relationship between chorea and acute rheumatism is maintained, but its nature is not explained. Not less interesting than the consideration of chorea minor are the chapters devoted to the pseudo-choreas and to chronic progressive chorea. Appended to the text is an analysis of seventy-three fatal cases of chorea minor. Altogether this monograph will stand as an authoritative statement of existing knowledge upon the subject of chorea, and will add luster to the reputation of its distinguished author.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS, WITH ESPECIAL REFERENCE TO THE APPLICATION OF REMEDIAL MEASURES TO DISEASE AND THEIR EMPLOYMENT UPON A RATIONAL BASIS. By HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by DRS. G. E. DE SCHWEINITZ, EDWARD MARTIN, and BARTON C. HIRST. New (fourth) edition, revised and enlarged. Octavo, 740 pages. Philadelphia: Lea Brothers & Co., 1894.

WE cannot better call attention to the new edition of this work than by quoting the author's words in the preface:

"The fourth edition of this work having been called for in less than four years after the appearance of the first, the author has taken advantage of the opportunity to rewrite and add to many of the articles on drugs, remedial measures, and diseases, and to insert practical information concerning the value and prescription of the really useful new remedies. Articles on methylene-blue, chloralose, pyrogallol, condurango, convallaria, duboisin, and other remedies have been added to the part of the work dealing with drugs. In the part dealing with remedial measures other than drugs, articles have been written on hypodermoclysis and enteroclysis, lavage, and upon mineral springs and climatic treatment. The latter article is not intended to be exhaustive, but to give the general practitioner an idea of the therapeutic value of certain well-known resorts, in order that he may offer rational advice to his patients as to where they should go in search of health. Several new articles in the part devoted to the treatment of individual diseases have been inserted, and new or modified applications of the older remedies carefully noted throughout the entire book."

ASEPTIC SURGICAL TECHNIQUE, WITH ESPECIAL REFERENCE TO GYNECOLOGICAL OPERATIONS, TOGETHER WITH NOTES ON THE TECHNIQUE EMPLOYED IN CERTAIN SUPPLEMENTARY PROCEDURES. By HUNTER ROBB, M.D., Associate in Gynecology, Johns Hopkins University; Professor of Gynecology, Western Reserve University. Illustrated. Philadelphia: J. B. Lippincott Co. 1894.

THOUGH there are still some men practising surgery whom the amazing contrast of the results of latter-day operations with those of twenty-five years ago has not yet converted to belief in the doctrine of wound-infection through bacterial agency, their number is happily

small, and is constantly diminishing. Every surgeon whose mind is not hopelessly incapable of welcoming new truth has embraced the great principle first presented by Lister, and, in proportion to his conscientiousness and capacity for close observation and accurate reasoning, has followed with delight the progress of the method from the first crude applications of chemic antiseptics to the present elaborate and wonderfully successful system.

The volume in hand is the latest literary product of American surgery and contains the most approved rules for the achievement of asepsis, based not only upon experience in the operating-room, but also upon close study in the bacteriologic laboratory. The author is an extremist, but he is a reasonable one, stating the case with judicial fairness and admirable clearness, insisting with emphasis upon the thorough employment of the means recommended, but without the least display of the righteous indignation at the unregenerate which made a certain book on modern methods at once picturesque and popular. The lazy and indifferent will object that the minuteness of precautions here enjoined is unnecessary; but those who have taken pains to keep pace with the times, and who consequently know that the best results of wound-treatment are obtained only by precise attention to such details, will welcome the book as an embodiment of the best rules which the largest opportunities and most faithful research have as yet devised. We trust that this valuable and interesting publication will receive the wide attention to which its merits entitle it.

THE MEDICAL NEWS VISITING LIST FOR 1895. Weekly (dated, for 30 patients); Monthly (undated, for 120 patients per month); Perpetual (undated, for 30 patients weekly per year); and Perpetual (undated for 60 patients weekly per year). Philadelphia: Lea Brothers & Co., 1894.

THIS useful and popular visiting list has been revised and brought up to date. The text contains an alphabetical table of diseases, with the most approved remedies, and a table of doses, sections on examination of urine, artificial respiration, incompatibles, poisons and antidotes, diagnostic table of eruptive fevers, and the ligation of arteries. The classified blanks are arranged to hold records of all kinds of professional work, with memoranda and accounts. Great care has been exercised in the selection of the contents and much judgment in the arrangement of the record-blanks. The mechanical execution of the book is satisfactory, and special attention seems to have been given to the quality of the paper and the strength and style of binding.

When desired, a ready reference thumb-letter index is furnished. A new and praiseworthy feature is the provision for obstetric memoranda. The list will fit an ordinary inside coat-pocket.

CORRESPONDENCE.

A FOOT-BALL ACCIDENT.

To the Editor of THE MEDICAL NEWS,

SIR: THE MEDICAL NEWS having recently contained a number of reports of accidents from foot-ball, I wish to report an accident that is rather uncommon under any circumstances and more particularly as a result of the game of foot-ball.

G. H. S., about nineteen years old, a student, while playing foot-ball was thrown down, striking his hand violently on the ground. He noticed some numbness of the hand, which later developed into pain, more especially in the little finger. The finger becoming swollen, the young man consulted a physician. Being dissatisfied with the result of the treatment, I was consulted, and found a small swelling to the proximal side of the terminal joint of the little finger and complete loss of power to extend the distal phalanx after flexion. My diagnosis of laceration of the extensor tendons was verified when, under cocain-anesthesia, I cut down on the tendons and found an interval of more than half an inch between the ends, the tear being a ragged one and situated less than one-eighth of an inch from the attachment of the tendon. Being unable to approximate the ends, owing in part to the delicacy of the tendons and in part to the length of time intervening between the time of the accident and the operation (about one month), I transferred two strands of large-sized catgut to the wound, filling the gap between the ends of the torn tendons, and stitched the wound with silk. I was gratified to get an almost complete recovery of the use of the finger, there being a slight incompetency of the extensor, due, I think, to a slight increase in its length following the graft.

Although taking the same precautions as regards asepsis in this operation as I do with my celiotomies, I was unfortunate enough to have pus in the wound, which necessitated the removal of all the stitches on the fourth day, but after thorough irrigation with 1:30 solution of carbolic acid, no further trouble was experienced, and I blame the suture-material for the pus.

Respectfully, JOHN A. HAWKINS.

105 JACKSON ST., ALLEGHENY, PA.

THE CONTROL OF HEMORRHAGE FROM THE SPLEEN AND OTHER ABDOMINAL VISCERA.

To the Editor of THE MEDICAL NEWS,

SIR: Dr. L. McLane Tiffany, in THE NEWS of November 17, 1894, p. 546, relates how he checked hemorrhage from the spleen by deep interrupted silk sutures. Mattress or square sutures of thick catgut, introduced by long, slender darning-needles, are, perhaps, still more efficient and innocuous in almost all hemorrhage from the abdominal viscera, and indeed would be well worth a trial in wounds of the lung. The kidney, even its pelvis, may be thus perforated as often as required with impunity. Were silk used in the pelvis of the kidney it is probable that calculous formations might result. By the suture alluded to a quadrangle of tissue is compressed.

Sincerely,

FRANCIS L. HAYNES.

LOS ANGELES, CAL.

NEWS ITEMS.

Foot-ball Civilization.—From sheer weariness and lack of space we discontinue the English "crop-reports" of deaths, broken bones, and depravity, but continue a few American specimens.

Will Washington, D. C., friends tell us if Captain Bahen is still alive?

"Ugh! Dirty, cowardly work! It reads nice in cold type, does it not? It is the method of the footpad, who steals up from behind and knocks you down with a slungshot."—[Casper W. Whitney on "Foot-ball Methods" in *Harper's Weekly*.]

The treasurer's report of the receipts of the Yale-Princeton foot-ball game has been issued, and shows that the game has netted a snug sum for the two college foot-ball associations. Each will receive $12,104.58 as its share of the profits of the game. The total receipts were $33,468; the total expenses, $9258.83. The receipts of the game last year were $39,439.12, but the expenses were also larger, so that the profits this year were nearly as great as they were a year ago.

Stewart Cravens, aged twenty-four, a student at the Culver Military Academy, Maxinkukee, Ind., died December 5th from an injury received in a game of foot-ball played three weeks ago between the cadets of the academy and the Indianapolis High School team.

The "men" honored by the college world are those conspicuous for their athletic achievements or possibilities. The god of undergraduate idolatry is the foot-ball player, the member of the university crew, the lucky fellow that gets on the base-ball nine or the intercollegiate team. The youths for whom the universities were founded by our wise and pious ancestors, as the Massachusetts Constitution says of the founders of the university at Cambridge, are of no account in the public opinion of their college. They are scrubs, or grinds, or digs. They are despised and looked down upon. This is not the case at Harvard and Yale and Princeton merely, but it is the case at every college of age or reputation in the East. The student who studies is a non-entity. The student who develops his muscles is admired and famous. The institutions founded for the development and propagation of scholarship among men are not true to the purpose of their founders. If cultivation and research exist among them, they exist furtively and without honor. Where are the names eminent in literature, in art, in philosophy, of the college graduates of the last ten years? What the colleges are producing is the professional athlete, the professional instructor in athletics, the professional college man. Take Yale College, for instance, as the most illustrious exemplar of athletic triumphs. What is Yale producing? What is the type of the Yale man now? Is it the poet, or the philosopher, or the man of science? Not much. It is the professional Yale man, or the Yale professional.—*New York Sun*.

"In another game I witnessed one of the players was bleeding slightly, and I noticed that there was frequently a sort of scuffle between him and the man opposite him. When time was called at the end of the first half I said to him, 'Your man is slugging, as you call it, is he not?' He answered with tears of rage in his eyes, 'He strikes at me every time he passes me.' 'Why don't you complain to the umpire?' He made no answer, and the next day denied that there was any 'unnecessary roughness on the part of the opposing players.'"—["A Yale Graduate" in *New York Evening Post*.]

"Had the most benevolent person lived in a country in which the excellence of these games was deemed axiomatic, had he been taken to them in his very childhood, and accustomed to associate them with his earliest dreams of romance, and had he then been left simply to the play of the emotions, the first paroxysm of horror would have soon subsided, the shrinking repugnance that followed would have grown weaker and weaker, the feeling of interest would have been aroused, and the time would probably come in which it would reign alone."—[Concerning the Roman Gladiatorial "Games," from Lecky's *History of European Morals*.]

Claude G. Campbell, a crippled student of Stanford University, was hazed by California University students for applauding the defeat of their team. His head was shaved on one side, his eyebrows and eyelashes cut off, and he was branded with initials on his cheeks.

The Centenary of the Discovery of Vaccination.—The directors of the German Vaccine Institute, at Weimar, are arranging for a celebration, to be held in 1896, in commemoration of Jenner's discovery of vaccination. In connection therewith there is to be an exhibition of old and new vaccine-instruments, of apparatus for the preservation of lymph, etc.; of original manuscripts on smallpox and vaccination; on the inoculation of sheep-pox and cattle-plague in pre-Jennerian days; of squibs on vaccination, of medals, portraits and autographs of prominent inoculators, vaccinators, and anti-vivisectionists, etc.

A Bacteriologic Laboratory for Denver.—Dr. L. E. Lemen, Health Commissioner of Denver, Col., has established a bacteriologic laboratory to be devoted to thorough research in cases of infectious and contagious diseases. Physicians will upon request be furnished tubes with instructions for placing therein pathogenic deposits, sputa, etc., after an examination of which a report will be returned.

The Journal of Medicine and Science is a new monthly publication, the first number of which bears date of December, 1894. It is the official organ of the Maine Academy of Medicine, and is edited by Dr. E. E. Holt, with the assistance of Dr. J. A. Spalding, in conjunction with the officers and fellows of the academy. It is published at Portland.

Le Nord Medical is the name of a new bi-monthly journal published at Lille under the editorial direction of Messrs. Doumer, Lemoine, and Phocas.

Dr. H. Augustus Wilson has resigned as Clinical Professor of Orthopedic Surgery in the Women's Medical College of Pennsylvania.

BOOKS AND PAMPHLETS RECEIVED.

Formalin. By W. W. Alleger, M.D. Reprinted from the Proceedings of the American Microscopical Society, Vol. XV. Washington, D. C.: Judd & Detweiler, 1894.

Climatic Therapeutics in the Treatment of Tuberculosis. By Edward O. Otis, M.D. Reprinted from the Boston Medical and Surgical Journal, 1894.

The Protozoa-like Bodies of Herpes Zoster: A Contribution to the Study of Psorospermosis. By M. B. Hartzell, M.D. Reprinted from the Journal of Cutaneous and Genito-Urinary Diseases, 1894.

Transactions of the American Gynecological Society. Volume XIX, for the Year 1894. Philadelphia: William J. Dornan, Printer, 1894.